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American Cinematographer

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SILAS EDGAR SNYDER
Editor and General Manager
JOSEPH DUBRAY
Technical Editor

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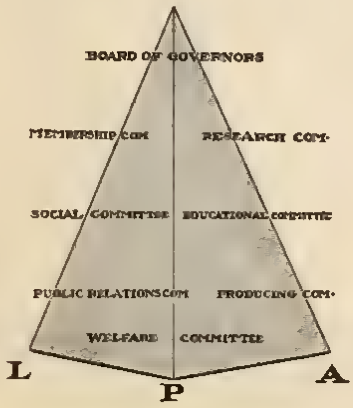

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EDITORIAL--The Voice of the A. S. C.

The Spring S. M. P. E. convention for 1928, just ended in Hollywood, was an event of great importance to the entire motion picture industry.

It was a happy meeting in the first place and the atmosphere of its sessions was fraught with good will and a spirit of get-together.

Tha convention was the causa of the first pilgrimage of the S. M. P. E. to the West Coast and to tha center of world production of motion pictures, and the interest in the meetlng was heen, therefore, both on the part of the visitors and of their hosts—the cinema colony of Hollywood.

The personnel of the S. M. P. E. is made up of representatives of all the great manufacturers in the world who contribute to the fahrication of equipment and supplies used in the production of motion pictures, and they hrought with them in the form of papers the very last word in the achievements of scientific research and invention to date.

To those interested at this end of the lina (and every progressive motion picture worher is interested) the activities of the S. M. P. E. ware a revelation. Their transactions hrought home to everyone that tremendous forces are at work hach there in the east, silently but diligently and determinedly researching, inventing, constructing, improving, refining the materials and equipment essential tn motion picture production to the end that the cinema may become higger and hetter in every way, a constantly expanding force for good in the world, a great industry, a finer art. And nn the part of tha Engineers there was manifested a new enthusiasm at intimate contact with the actual processes of motion pictures and the workers (from executive to artisan) who make them. The net result of this contact will mean that the Enginear will go hach to his workshop, his lahoratory with a wider horizon, a hetter understanding of the needs of the cinema workers in the studios and a fund of new information which will enable him tha hetter to salve his problems.

Who shall say that from this convention of the S. M. P. E. there shall not he brought forth

Better Films.
Mora sensitive emulsions.
Better lamps and improved lighting equipment.
Improvements in talking pictures.
Improvements in television.
Stereoscopic photography or its approximation.
Refinements in lenses.
Improvements in color photography.
Greater camera efficiency.

Better laboratory methods and countless hatterments in every department of production.

As the cinema of today is superior to the cinema of fifteen years ago, so shall the cinema of fifteen years hence be a thing more glorious than any of our prophets have forecast, and for the reason that the Sociaty of Motion Pictura Engineers, The American Society of Cinematographers, the Academy of Motion Picture Arts and Sciences, the Motion Picture Producars' Association, and every wide awahe dapartment of motion pictures will be ceaselessly working towards perfection.

It is great to know your fellow workman, for the man you don't like is the man you don't know, and the new spirit of co-operation and sympathetic understanding that has already grown out of this convention is bound to persist and to work steadily to draw all elements closer together. Henceforth the Engineers and their workshops will be real to us away out here in Hollywood, and henceforth the great motion picture studios and the various lots so familiar to us will be real to the Engineers. So shall this great structura be welded into one great smoothly running machine.

Another result of the convention activities was the organization of a Hollywood Section of the S. M. P. E., which began its activities with a roster of sixty members, forty-two active and eighteen associate.

The organization of this Section, which begins its work with extraordinary enthusiasm horn of the stimulus of the convention, will in turn have the effect of keeping vividly before the studios the S. M. P. E. tradition of indefatigable work for progress, and much that is new and constructive will also originate in this West Coast Section for the men composing it are entirely worthy tn uphold the gonfalon of S. M. P. E.

Particularly will this Wast Coast Section he of value in co-operation with the proposed research laboratory announced by Mr. Fred Beetson, Exacutiva Vice-President of the Producers' Association, on the occasion of the hanquet tendered the S. M. P. E. by tha Academy at the Roosevelt Hotel April 11th.

This great innovation will supply the A. S. C., the West Coast Section, S. M. P. E., and the technicians in general of this world cinema center, a medium of expression in terms of scientific achievament and invention, certain to he productive of many advances.

This West Coast Section working with the parent hody and interpreting the needs of the local production forces will prove of immense value in bringing about improved conditions and will, therefore, be a tower of strength and inspiration.

On the whole, the entire industry may congratulate iself on the success of the convention and mark this week as the heginning of a new and greater epoch in tbe history of the motion picture.

The A. S. C., while modestly admitting to being the incubator of the idea of an S. M. P. E. convention in Hollywood, as early as six years ago, most heartily congratulates Mr. Beetson, af tha Hays organization; Mr. Woods, of the Academy, and their associates, for their great work in making this event the unqualified success everyone admits it to he.

S. M. P. E. Convention

The spring convention of the Society of Motion Picture Engineers, held in the rooms of the Academy of Motion Picture Arts & Sciences at the Hotel Roosevelt, Hollywood, April 9th to 14th inclusive, was in many respects the most remarkable in the history of the organization.

The attendance was the largest in the career of the society notwithstanding most of the delegates came clear across the continent to be present at this, the first convention to be held in the center of motion picture production.

The program as published in THE AMERICAN CINEMATOGRAPHER for April, was carried out to the letter and the number of interesting papers read has never been exceeded at any previous convention.

Of these several were submitted by members of the A. S. C., notably that on incandescent lighting by the Research Committee of the Society which is herewith published in full, together with a number of abstracts from other papers of peculair interest to the A. S. C. and to readers of THE CINEMATOGRAPHER.

Between sessions the delegates and their wives were entertained in manifold ways by motion picture people in all departments of the industry at theatre parties, luncheons, dinners, beach trips, by little journeys to the orange groves, the mountains, the desert and historic places.

The two great social events of the week were the Spanish Dinner given by the American Society of Cinematographers and the formal banquet tendered the delegates and their ladies by the Academy of Motion Picture Arts and Sciences.

Most of the out of town visitors remained to attend the first annual convention of the Academy which, judging by the interest manifested in it because of its constructive program, will score an unqualified success.

A complete list of delegates and guests at the session of the Society of Motion Picture Engineers is herewith presented:

Banquet tendered the S M P E Convention delegates and their ladies at the Roosevelt Hotel, Hollywood, Wednesday night, April 11, 1928, by the Academy of Motion Picture Arts & Sciences. The speakers of the evening were: Douglas Fairbanks, Cecil B. DeMille, Frederick Beetson, Milton Sills, Daniel B Clark, President of the A S C, Louis B Mayer, Fred Niblo, Willard B. Cook, President S M P E, Dr C E K Mees, Eastman Kodak Company, L A Hawkins, General Electric Company. It was a beautiful function and the sentiments uttered by the speakers were constructive and progressive, the spirit of get-together being the dominant note. In his talk Mr. Louis B. Mayer paid a fine tribute of praise to the technical departments of the industry as having taken the initiative in the cinema's march of progress. President Daniel B. Clark of the A S C, spoke on the Society's slogan—Loyalty, Progress and Art.

Aerial Cinematography

By Harry Perry, A. S. C.

During the past six or seven years, scenes involving the making of motions pictures in airplanes have been included in a number of photoplays.

About a year and a half ago, production was started on a war epic of the air which was to be entitled "Wings" and in making this picture many problems in aerial cinematography were solved.

The Government consented to allow the Army and Air-forces to co-operate and give all the assistance which meant the use of Government ground school at Brooks Field, San Antonio, the advanced flying field (Kelly Field) and the use of airplanes and help of their pilots. Also the Government gave permission to build a replica of the terrian of the St Mihiel Drive at Camp Stanley reservation near San Antonio, together with the help of the United States Army Second Division, consisting of over 5 000 men, including all the different branches—tanks, machine guns, artillery, infantry, etc. This division was the same one that participated during the war in the real drive.

The set laid out for the St. Mihiel drive consisted of a piece of ground about a mile long and one-eighth of a mile wide in the foreground, increasing to about three-fourths of a mile wide in background and was covered with trenches, shell holes, barbed wire and pill boxes (machine gun nests) and all kinds of props, such as broken guns, gun carriages and shells. This set cost approximately $300,000 00 and was made with the idea of photographing the drive from airplanes, but when the actual work was started, it was found that when the action was photographed from an airplane, close enough to the ground to show detail, the speed of the plane was so great that it was impossible to hold anything on the screen long enough to be seen properly, and that when the plane was up high enough to show any part of the scene for a sufficient length of time, detail was obliterated so it was necessary to build a tower 100 feet high with platforms every 20 feet from which the drive was photographed.

Another experiment which was tried but was not successful on account of sway and vibration was the towing of a captive balloon and photographing from a height of about 100 feet.

Here are the members of the new S. M. P. E. West Coast Section, organized in the rooms of the Academy of Motion Picture Arts and Sciences on the night of Monday, April 16th. The officers are C. H. Dunning, Chairman; John W. Boyle, Secretary and Treasurer; Board of Managers George Mitchell, Daniel B. Clark, Peter Mole. Meetings will be held on the first Thursday night of each month in the rooms of the Academy. George Volck was elected chairman of the by-laws committee. Joseph Dubray A. S. C., chairman membership committee. The Section began its career with sixty members, forty-two active and eighteen associates. In this picture the members of the Board of Governors of the S. M. P. E. are posed with the members of the new Section.

A problem which caused quite a little trouble was the photographing from another airplane of the take-off of a group of airplanes in formation for a dawn patrol scene, which had for a background a road on which were marching troops. It was found that too much dust was made by the rising planes and a good formation was almost impossible to get, so that it was necessary to take off first, then circle the field and go down nearly to the ground to get a good shot of the squadron with the desired background.

In making airplane shots—either of single airplanes or planes in formation—unless clouds were used for a background, the appearance of motion was lacking, although quite a few scenes were made without clouds after waiting weeks for them.

Much trouble and risk was encountered photographing what is called a "dog fight" above the clouds. There were usually about ten airplanes taking part in this, five to a side, in addition to two or three camera ships, which would all take off from the field and then climb up about five or six thousand feet or more and go through clouds for fifteen or twenty minutes without being able to see a thing. Finally the planes would break through and find a beautiful empty world full of billowy clouds, but no other airplanes. Then gradually one and then another would appear and at last we would get all the formations together; the signal would be given, usually a dip or dive of the camera ship, and the fight would start, ships flying at each other, some falling down through the clouds in smoke, which was made by releasing a gate in a box containing lampblack attached under the plane body, and finally the sky was again clear of all but camera ships as they had all gone down chasing each other or falling through clouds and so the cinematographer follows in the hope that he has a successful story in the camera.

Some Novel Projected Motion Picture Presentations

LEWIS M. TOWNSEND AND WM. W. HENNESSY

Projection Dept., Eastman Theatre and School of Music
Rochester, N. Y.

Motion picture projection is taking its place among the dramatic arts. The most recent accomplishments of scientific and engineering progress are made use of in presenting a more pleasing and complete motion picture entertainment. The dramatic effect in a photodrama is heightened by creating a desirable atmosphere in the use of a suitable motion picture introduction. Certain scenes are given emphasis by projection on an enlarged or reduced scale.

In the modern theater the transition from motion pictures to stage acts and the reverse are made smooth and pleasing by the use of special projection and lighting effects devised by the projection department. Animate backgrounds and harmonious lighting are given to stage acts by projection. Elaborate acts are tending to disappear from the motion picture program as the possibilities of motion picture and lighting effects are more fully realized.

Hollywood and the 16mm. Film

J. B. CARRIGAN, EDITOR AMATEUR MOVIE MAKERS

Motion picture amateurs were few in number four or five years ago because the only apparatus and processes available were cumbersome and expensive professional ones. The appearance of dependable and inexpensive 16 mm. equipment by which pictures can be made for a small fraction of previous cost has made thousands of enthusiastic amateurs. Not satisfied with making portrait and record films, the amateur has interested himself in dramatic productions. This tendency was foreseen by a film library organization which answered the need by supplying dramas and other matter upon which a well rounded program of entertainment could be built.

A subsequent development was the outright sales of films of various types, although at present the tide seems to be turning toward rental rather than sale of most subjects.

New tendencies are shown in releasing film under various contracts such as a coupon block booking plan, as news periodicals, or as a "film of the month." Advertising films are being loaned upon payment of postage.

One producing company has been formed exclusively for the preparation of subjects for 16 mm. releases. Other producers and distributing companies are looking to 16 mm. distribution for in-

creased return on features which have appeared in the professional field

Amateur motion picture photography utilizing 16 mm film is rapidly taking its position in a new field not in competition with professional work in co-operation with it. Those interested in the future of professional photography can give attention to these new developments with great profit

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REPORT ON EXPERIMENTS ON MAZDA LIGHTING SPONSORED BY THE ACADEMY OF MOTION PICTURE ARTS AND SCIENCES AND PREPARED BY THE RESEARCH COMMITTEE OF THE AMERICAN SOCIETY OF CINEMATOGRAPHERS.

Motion picture actors, photographers and producing companies have cooperated with manufacturers of film and of lighting equipment in testing tungsten incandescent lamps for studio lighting. Especially high power incandescent lamps were used in comparison with arc lamps, mercury lamps and daylight. It was decided from the results obtained in the tests that the tungsten incandescent lamp is superior to all other types of light source now in use in the following respects: convenience, economy of power and operating labor, ready controllability, freedom from smoke and dirt; superior color of light permitting correct tone reproduction of colored objects when used with panchromatic color sensitive motion picture film

A new technique of make-up is necessary when this lighting is used. The usual hideous make-up is no longer used because the tones in a subject are reproduced exactly as they appear. Actors are able to work to better advantage in a scene which has a normal appearance as a result of the use of this quality of light and the natural use of color in make-up and in painting the set

The incandescent lamp emits more heat than the other lighting equipment but it is expected that this can be taken care of by correct ventilation.

American Motion Pictures Abroad

By N. D. GOLDEN

Bureau of Foreign and Domestic Commerce, Washington, D. C.

The maintenance of our foreign business in motion pictures is of vast importance to American distributors. More than thirty per cent of the entire revenue from American made pictures comes from abroad and any marked curtailment of this would be felt strongly by the industry. During 1927 about 230,000,000 feet of American motion pictures were sent to foreign markets—an increase of about 11,000,000 feet over the year 1926. Latin America was the biggest importer taking about 80,000,000 feet followed closely by Europe with 70,000,000 feet. The Far East has also increased her takings of American pictures. In 1927 60,000,000 feet were sent to this territory. While Latin America imported from the United States 10,000,000 feet of film more than Europe during 1927, nearly 65 per cent of our foreign revenues come from European countries

During 1927 it is estimated that about 400 feature films were produced in Europe. Of this number Germany supplied 241, France 74, England 44 with the balance divided between Poland, Austria, Hungary and others

Adverse legislation affecting American made motion pictures has been established in England, Germany, France, Austria, Hungary and Italy. This legislation is primarily intended to help establish and place the motion picture industry in these countries on a sounder basis and to help the distribution of the home made product.

Theatre expansion is increasing tremendously in Europe. During 1927 about 733 new or converted theatres were added to the already existing 21,000 theatres in Europe resulting in an increase of about 390,000 seats in European theatres

Latin America and the Far East offer large potentialities for American Made pictures in the future. In Latin America production of motion pictures has met with little success, while in the Far East, Japan and Australia have been increasing their production to such an extent that these two countries may supply considerable competition to American pictures at least within their own borders. With the exception of Japan American motion pictures command about 90 per cent of the showings in these regions

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Photographic Characteristics of Picture Studio Light Sources

L. A. JONES AND M. E. RUSSELL

Research Laboratory, Eastman Kodak Co., Rochester, N. Y.

A survey has been made of all types of light sources which are available commercially for motion picture studio lighting. By means of a newly devised photographic method of testing it is possible to find out directly the efficiency and correctness as to color of light given by different kinds of lighting equipment. The appearance of an object can be reproduced exactly by photography only when a light is used whose quality is correct for the color sensitiveness of the photographic film

The Reproduction of Mobility of Form and Color by the Motion Picture Kaleidoscope

By LLOYD A. JONES AND CLIFTON TUTTLE

By combining a kaleidoscopic prism with a suitable motion picture camera it is possible to make motion pictures in color which show the changing patterns produced when a suitable grouping of colored elements is moved slowly past the end of the prism. Such color film may be used in the theatre for the embellishment of the motion picture program. A description is given of an instrument constructed for making such film by the two-color process. This consists essentially of a standard Bell & Howell camera to which is added a suitable holder for the two-color taking filters, a kaleidoscopic prism, a pattern plate of colored gelatin designs on glass, a lamp for illuminating the pattern plate, and the mechanical means for driving the various elements in synchronism. Diagrams are shown illustrating the various types of symmetrical, quasi-symmetrical and unsymmetrical patterns formed by the use of various types of prisms. The paper is illustrated by a reel of film showing both the form and the color sequences obtainable

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A Line Screen Film Process for Motion Pictures in Color

By JOHN H. POWRIE

Warner Research Laboratory, New York, N. Y.

Motion pictures in natural colors can be made by the use of an ordinary camera in conjunction with a specially made film. Very fine lines are printed on the film photographically and then colored by dye mordanting. The colored lines thus produced, being very fine, analyze each part of the image into the three color components. When this film is developed a negative in complementary color results. From the negative any number of positives can be printed by the use of a similar film. Ordinary projection equipment is used in exhibiting these positives

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Continuous Projectors

J. F. LEVENTHAL, *New York, N. Y.*

In the motion picture projector, one picture after another is brought into position at a rate of 16 to 25 pictures in one second. This rapid starting and stopping greatly strains the perforation holes in the film. As soon as permanent damage is done to these perforations, the picture appears unsteady on the screen. The intermittent motion of the film is eliminated in the "continuous projector," in which the film moves continuously and certain optical parts oscillate in such a way as to keep the picture steady on the screen. This type of machine can be operated smoothly at high speed and on account of its quietness would be especially desirable on projectors used in the home.

Pantomime Pictures---Stories by Radio for 'Home Entertainment

C. FRANCIS JENKINS

Equipment has been perfected by which it is practical to transmit motion pictures by radio so that they can be viewed in the home with a receiving set which shows an image about 7x9 inches in size. In the broadcasting station a motion picture film is passed through the transmitter which analyses each picture into lines by means of a number of lenses mounted in a disk which rotates rapidly in front of a light source. The light passing through different parts of the picture is of different intensity and is received on a light sensitive cell which sends a correspondingly strong or weak electrical current to the sending station. By the use of a similar disc in the receiver the image is reconstructed for reviewing

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Machine Development of Motion Picture Negative Film

By C. R. HUNTER

Universal Pictures Corp., Hollywood, Calif.

The characteristic tendency of this age, to do all kinds of work by machinery has been shown in the introduction into the field of motion picture film finishing, of elaborate machines to replace manual operations. To date, it has always been considered an unjustified risk to process a valuable original negative by machine, but a processing machine built especially for the purpose has been used very successfully for developing negative film. The mechanical perfection of this device has removed danger of accidents so that it is possible to take advantage of the uniform perfection attainable only by machine methods

Members of the S. M. P. E. Present at Convention

J. S. Watson, Jr., Rochester, N. Y.; Wm. F. Rudolph, Mechanical Supt. Paramount Famous Lasky Studios; G. E. Patton, Director, Ontario Govt. Motion Picture Bureau; E. B. Olson, Projectionist, Warner Bros.; W. W. Johnstone, Trav. Representative Bausch & Lomb Nptical Co.; Wm. W. Hennessy, Eastman Theatre; Leigh M. Griffith, Paramount Famous Lasky Corp., C. H. Fulton, Gen. Mgr. E. E. Fulton Company, E. J. Fulcher; Chateu Film Co.; Leslie E. Cuge, Arrowhead Lake Theatre Co.; Dodge Dunning, Dunning Process Company; Joseph Aller, Consolidated Film Laboratories; J. A. Ball, Technicolor Company; Fred W. Beetson, Association of Motion Picture Producers; Frank Benford, General Electric Co.; W. W. Bird, Regina Film Co.; George A. Blair, Eastman Kodak Company; C. W. Burchett, E. E. Fulton Company; L. J. Buttolph, Cooper-Hewitt Electric Co.; Willard B. Cook, Kodascope Libraries, Inc.; H. T. Cowling, Eastman Kodak Company; L. S. Cozzens, DuPont Pathe Film Mfg. Corp.; J. E. Crabtree, Eastman Kodak Company; C. C. Dash, Hertner Electric Co.; Earl Denison, United Artists Studios; R. P. DeVault, International Projector Corp.; A. C. Downes, National Carbon Co.; Carl C. Egeler, National Lamp Works; R. E. Farnham, National Lamp Works; Perry Evans, A. S. C.; J. T. Flanagan, Tri-State Motion Picture Co.; T. T. Harrington, Phil. Quartz Co. of Cal.; K. C. D. Hickman, Eastman Kodak Co.; W. M. Harris, C. B. DeMille Pictures Corp.; Emery Huse, Eastman Kodak Co.; Loyd A. Jones, Eastman Kodak Company; Wm. V. D. Kelley, Engineer; W. C. Kunzmann, National Carbon Co.; H. J. Kirkpatrick, Universal Pictures, Inc.; W. W. Kelley, W. W. Kelley Film Lab.; W. E. Lockhart, The Electric Corporation; J. M. Leison, C. B. DeMille Studio; G. A. Mitchell, Mitchell Camera Co.; Peter Mole, Mole-Richardson, Inc.; Dr. C. E. K. Mees, Eastman Kodak Co.; B. E. Norrish, Associated Screen News; M. W. Palmer, Warner Research Laboratory; L. C. Porter, General Electric Co.; J. H. Powrie, Warner Research Laboratories; B. P. Puffer, Eureka Film Corp.; Bill Pearsall, Aztec Laboratories; W. B. Rayton, Bausch & Lomb Optical Co.; H. H. Roemer, Q. R. S. Company; Oscar A. Ross, Consulting Engineer, New York City; I. Serrurier, Moviola Company; John T. Shannon, Cooper-Hewitt Electric Co.; Paul G. Sprunck, DeMille Studios; V. B. Sease, Dupont Pathe Film Mfg. Corp.; W. V. Skall, Eastman Kodak Co.; L. M. Townsend, Eastman Theatre; A. Geo. Volck, Cecil B. Demille Studios; E. A. Willriford, National Carbon Company.

Guests of the S. M. P. E. Convention

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Society of Motion Picture Engineers West Coast Section

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Incandescent Tungsten Lightings in Photography

By The Research Committee of the
"American Society of Cinematographers"
A Transaction of the S. M. P. E

The investigation on the adaptability of Incandescent Tungsten filament lamps for the purpose of lighting motion picture sets is still under intensive study and investigation and therefore this communication can only deal upon conclusions of general practical order which have been derived from the extensive series of tests which have been recently conducted by the American Society of Cinematographers under the auspices of the Academy of Motion Picture Arts and Sciences and the Motion Picture Producers' Association.

The American Society of Cinematographers wishes at this time to extend its most sincere thanks and appreciation to all corporations and individuals who, besides the above mentioned organizations, have generously contributed the financial and moral support which have made possible the conducting of these tests.

The investigation carried by the American Society of Cinematographers during this period has been divided into the following main subjects:

First—The Actinic values as to colors of tungsen filament lamps compared with the white-flame arc.

Second—The physical effects of tungsten filament lamps

Third—The pathological effects of these lights upon performers and operators who are called to be exposed to their radiations for a certain length of time.

Photochemical Effects

Due to the spectral distribution of energy of the incandescent tungsten lamp, only **panchromatic aensitive emulaion** have been taken into consideration.

A chart showing a range of eight colors, Purple, Violet, Blue, Blue-green, Green, Yellow-green, Yellow, Orange and Red, prepared with organic basic aniline dyes, was photographed first without any filter, under a skylight (noon light from a clear sky), then under a series of Wratten gelatine filters, and finally under Incandescent Tungsten Lamps, Orange Carbons, White-flame carbons. Mercury vapor Cooper-Hewitt tubes and Mercury and Neon Cooper-Hewitt tubes whose radiations were mixed by means of a diffuser in the proportion of two Mercury tubes to one Neon.

All artificial lightings were diffused by means of one Florentine glass, with the exception of the Mercury Neon light, which was transmitted through two white silk diffusers, placed approximately three inches apart, and five inches from the tubes.

Corresponding to each colored section of the chart, a portion of equal area in neutral gray was giving the **visual** approximately relative value of the hue and saturation of the color.

The negatives obtained under these lighting conditions and by as normal an exposure as it was possible to compute, were developed by the time and temperature system.

As it was expected, the negatives obtained by skylight, white-flame arc and Mercury vapor tube showed a distortaion in the rendition of values mostly evident in the Red and Violet, the former color registering a darker hue and the second one a lighter tone than those represented by the usual gray interpretation of the rendition of these two colors.

The Wratten No. 3 Aero No. 1 filter used in conjunction with sky-light proved to give a fair rendition, the Blue and Blue-Green registering somewhat lighter than the visual interpretation.

The Wratten No. 6 K1 Filter also in conjunction with sky-light gave a less true rendition in the Violet, which color registered noticeably lighter than the visual interpretation.

The Wratten No. 7 K1½ Filter gave a fine rendition from the Red to the Green and registered a trifle too light rendering of the Blue-green and Blue and resumed a fine rendition in the Violet and Purple.

The Wratten No. 8 K2 Filter gave a good rendition of all colors, except the Red which showed a trifle too light.

In regard to the artificial lighting, the Cooper-Hewitt Mercury Neon tubes mixed lights in the proportion above mentioned showed a lack of correction in practically all of the colors and mostly in the Yellow, Yellow-green and Violet, the first two registering darker and the last registering lighter than the visual interpretation. However, as the mixture of Blue and Red radiation of this type of illuminant can be controlled at will, a more thorough correction can be obtained.

The Orange carbons showed a marked difference in the rendition of the Violet, which color registered too light, other colors giving a fair rendition.

The Incandescent Tungsten Lamps gave the following rendition:

Red: Good rendition.
Orange: Registered a trifle darker than the visual interpretation.
Yellow: Registered a trifle darker than the visual interpretation
Yellow-green: Registered a trifle darker than the visual interpretation.
Green: Good rendition.
Blue-green: Good rendition
Blue: Good rendition.
Violet: Registered lighter than the visual interpretation.
Purple: Good rendition.

The general rendition is very similar to the one obtained with a W1 Wratten Filter in conjunction with skylight, and gives a somewhat better rendering of the blue.

To all intents and purposes the Mazda color rendition in conjunction with panchromatic materials can be compared to the color rendition of the K1 filter used in conjunction with day-light, and with the same sensitive material.

The somewhat better correction obtained with the use of the Aero and the K1½ Filters in daylight, would not in our estimation make a marked difference when compared to the rendition of Incandescent Tungsten Lights, in Interior work, and a sufficient matching of color values will be obtained, so that these slight differences cannot be detected except by highly trained experts.

Quality of Rendition

From the foregoing it is quite evident that the quality of photographic color rendition shows a marked improvement on the quality obtained with the white-flame arcs.

The improvement is especially noticeable in the photographing of sets of a highly decorative nature, in the photographing of masses of people in multi-colored costumes, and in the photographing of characters presenting delicate shades of colorings, such as a fair-complectioned subject with blue eyes and blonde hair, or characters which bear a distinct color individuality, such as characters belonging to the different colored races.

It is quite evident that the better rendition of colors obtained with the use of Incandescent Tungsten lightings will require special attention and thorough study of the art of make-up. We have found, for instance, that the rouges heretofore used in the make-up of lips and the several shades used in the "linings," under arc light-

ings, must be modified so that they will correctly respond to the exigencies of the Tungsten Filament lighting system.

The application of make-up will have to be carried with a slightly different technique which in general will prove of greater comfort to the performer.

The most apparent disadvantage found in the use of Incandescent Tungsten Lamps as compared with the Arc lighting system was a lack of penetration in the blacks of the subject which is photographed. It has been found generally necessary, especially when using a so-called low key of lighting, to throw additional light on the black full-dress suit or dress worn by a performer, to avoid a complete absence of the details which are necessary to give luster and life to the appearance of the suit or dress.

The flux of light emitted by the Incandescent Tungsten lamps although possessing less candle-power than the one emitted by the arc lights, under identical conditions as to amperage and corresponding consumption of electric current, has a better actinic influence on the panchromatic sensitive emulsions and this will result in a rather sensible economical value.

It is impossible to give any definite data on this phase of the subject because the lighting of a set or of a performer or group of performers cannot be mathematically expressed. It entirely depends upon the requirements that are needed by the Cinematographer for the photographic rendition of the set or performers in accordance with the interpretation of the subject. These requirements are mostly regulated by the artistic, dramatic and psychological value of the general scheme of lighting.

Supposing it possible to conceive an exact parallel between the two systems of lightings for the obtention of identical results the actinic value of the Incandescent Tungsten lights will prove superior to the white-flame arc system.

Physical Effects

The high temperature emitted by the Incandescent Tungsten lamps will perhaps prove disturbing, especially during the summer months.

It has been stated that the amount of heat emitted by these lamps is not greater than the heat emitted by the arc lights, taking into consideration the heat radiation emitted by the arc itself and the resistance usually placed at the foot of this type of lamps.

Admitting this is true, we nevertheless find that the heat directly emitted by the Incandescent Tungsten bulbs, with the addition of the heat reflected by the housing of the bulb, is more disturbing to the performers and opertors as it is concentrated on the one surface closer to their faces and not distributed throughout a wide area as in the case of the arc lamps.

This uncomfortable heat has provoked several complaints from performers and should attract the attention of designers of the bulb housings. We are informed that housings are being designed and constructed provided with double-barrel arrangements which should greatly increase the ventilation within the housing and thus reduce the ill effects of the heat radiation on the performers.

In photographing a picture, and especially close-ups, it is common practice to diffuse the glare and sharpness of the light, be it Arc or Incandescent filament, so as to obtain a more pleasing rendition of the skin texture of the subject, and to better control the intensity of the general lighting system in regard to the sharper high lights. This diffusion is obtained by the use of glass or silk diffusing screens placed between the source of light and the subject.

It would be advisable to carry an investigation on materials which can be used as diffusers and which would have the property of transmitting a sufficient percentage of the light radiations and absorb or deviate the direct and reflected heat radiation.

It would perhaps be advisable to construct the housing of the bulbs so that a double wall could be provided and the space between the walls filled with some heat absorbing material. A great percentage of heat radiation would thus be absorbed and discharged in a direction opposite to the performer.

The use of ventilating blowers or fans connected with the lamp itself cannot possibly be considered on account of the disturbing noise that is inherent to this type of apparatus.

The proper ventilation of the stages should also be considered.

One of the greatest inconveniences encountered with the Arc system of lighting is provided by the smoke produced by the combustion of the carbons. Currents of air are nowadays carefully avoided on any set because of increase of the volume of the smoke evil and because of the constant danger of having smoke blown into the set and in front of the camera during the taking of the picture. The ventilation of the stages is for this reason reduced to a safe minimum.

The use of smokeless Incandescent Lights will permit a more efficient general ventilation system of the stages, which in turn will prove very beneficial in minimizing the effects of excessive heat.

The most apparent difficulties encountered in the making of the tests during the investigation recently conducted were the impossibility of controlling at will the intensity of the lights used for spotting purposes and the impossibility of obtaining clean-cut, clear, shadow effects.

It has been announced by manufacturers of lighting apparatus that improvements in the building of the housings, the reflecting surfaces, and the filaments are under consideration so that satisfactory results may be expected in a short time in the spotting question.

As per clean-cut shadows, which are very desirable at times, the improvements in the spotting apparatus should at least partially solve the trouble.

This question is, however, of secondary importance, as the impossibility of obtaining clean-cut shadows may not at the end result as serious as it appears a priori, as the visual distinctness of the shadow does not seem to be sufficiently deficient to become offensive.

Pathological Effects

Incandescent Tungsten lightings have not been used as yet to a sufficient extent to make possible a detailed statement on their pathological effects.

The talking-motion-picture producers have had perhaps the best and longest experience on this phase of the subject.

It appears that pathological inconvenience due to the incandescent system of lightings are mostly caused by a lack of precaution in the passing from the warm interior of a stage into a much cooler out-door temperature.

Medical authorities consulted by the Research Committee of the American Society of Cinematographers declare that no injurious effects can be expected from this type of lights.

To cite, word by word, the conclusions arrived at by a prominent physician who has specialized on the therapeutic effects of light radiation:

"Regarding the question as to the effects of In-
"candescent Tungsten Lights on the eye. I may say
"that I have used the thousand-Watts lamps for
"therapeutic purposes for the past ten years and
"have never noted any injurious effects on the eye.
"I have personally worked in the full glare of the
"above lamp, backed by a reflector, and have never
"noticed any other effect than the natural fatigue
"after several hours' work in the powerful light.
"These lamps transmit some ultra-violet energy of
"the longer wave-length (longer than 3500 A. U.).
"My work with selective rays from the mercury spec-
"trum has proven that these long ultra-violet waves
"are absolutely harmless to the eyes."

These communications from medical authorities are quite conclusive on the subject, although careful data should be collected during a long lapse of time on different subjects and under all possible working conditions.

Practicability

It is quite obvious that the reduction of the bulk of the lamps and consequently the reduction of their weight will prove a distinct advantage in the general operating process of the illumination of a set.

Lighter weight lamps, lighter cables, and the possibility of keeping close control of the intensity of the light by measuring instruments installed on the set itself,

(Continued on Page 33)

A close-up of the

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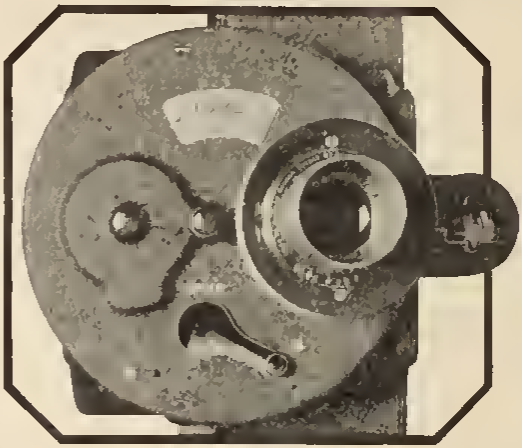

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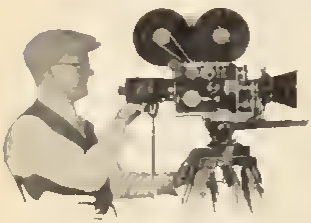

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Light Filters

Their Characteristics and Applications in Photography With Explanatory Diagrams---Part Three

By Loyd A. Jones

Of Eastman Research Laboratories. Abridgement of Paper from S. M. P. E. Transactions

In general a collection of objects which compose a scene to be photographed presents to the eye areas which differ in *color*. In fact it is only by differences in one or more of the three attributes of color that objects are distinguishable from each other by the visual process. The three attributes of color are *brilliance, hue, and saturation.*

Since it is impossible with the present photographic process to reproduce all of the attributes of color, we are forced to attempt the reproduction by means of the only attribute at our disposal.

The *hue* and *saturation* contrasts are in photographic reproduction, necessarily zero and in view of this situation, it seems most logical to consider first how closely the attribute *brilliance* can be reproduced.

Panchromatic materials, such as motion picture panchromatic negative film, are sensitive to all wave-lengths of visible radiation. They still possess, however, a great excess of sensitivity, as shown by curve *D* in Fig. 7, to wave-length shorter than 500 mμ and hence in general render the blue-greens, blues, and violets much too high on the visual tone scale relative to the grays and to the warm colors. To obtain correct rendering of the brightness attribute of color it is necessary therefore in some way to modify the effective distribution of sensitivity in such a way that it will correspond more nearly with the visual sensitivity to radiation of different wave-lengths. The correct rendering of the brilliance attribute of color is termed *orthochromatic reproduction.* As used in this sense orthochromatic (derived from Greek roots, ortho—correct, and chromatic—color) has a very different meaning than as applied to photographic materials which as a matter of fact do not give *correct* color rendering but only more nearly correct than a blue sensitive plate.

Orthochromatic reproduction may not in all cases give the most *desirable* or even the most *correct* photographic rendering of visual contrast which is dependent upon three factors, *brightness contrast, hue contrast,* and *saturation contrast.* Orthochromatic reproduction, which means simply the correct reproduction of brightness distribution in the object, must however, be regarded as the general case of which the enhancement or depression of certain definite colors above or below their normal position in the visual brightness scale must be considered as special cases. Certainly a thorough understanding of the principles of orthochromatic reproduction is prerequisite to an intelligent use of methods for producing distorted brightness reproduction.

Orthochromatic Reproduction Theory

In order to compute the spectrophotometric absorption curve of a filter which when used with panchromatic film will give perfect orthochromatic reproduction of brightness it is only necessary to know the distribution of sensitivity for the photographic material in question and the distribution of sensitivity for the eye. These functions are shown graphically in Fig. 10 curve C representing the spectral sensitivity of the photographic material and curve D the visibility function for the eye. Both of these are plotted with maximum ordinate equal to unity. In order to determine the spectrophotometric *transmission* function of the required filter it is only necessary to divide the ordinate of the visibility curve at any wave-length by the corresponding wave-length of the photographic sensitivity curve. Proceeding in this manner values were obtained from which the curve *A*, Fig. 11, was plotted, the scale of transmissions being shown at the left of the diagram. Converting these values to density the spectrophotometric density characteristic of the theotrically perfect filter is shown as curve *D*. The absorption characteristic of the light filter which with a given photographic material will produce perfect orthochromatic reproduction is dependent only on the two functions shown in Fig. 10 and is independent of the spectral distribution of energy in the light source illuminating the object.

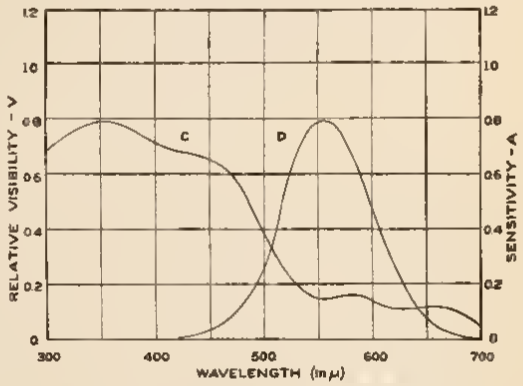

Fig. 10 Spectrophotometric curves showing spectral distribution of sensitivity, *A*, for panchromatic film, *C*, for visibility function of the eye, *D*.

In practice it is found that a filter which produces *perfect* orthochromatic rendering is entirely too dense, necessitating a prohibitively great increase in exposure time. It is customary therefore to compromise and use a filter which produces a satisfactory approach to orthochromatic rendering The filters usually used for this purpose absorb the ultra-violet entirely and a portion of the visible spectrum in the region between 400 and 480 mμ. The Wratten filters of the *K* series represent typical light filters of this type. Of these the *K-2* (Wratten No. 8) absorbs practically everything of wave-length shorter than 460 mμ. This filter used with panchromatic motion picture negative produces an approximation to orthochromatic rendering and for most purposes is satisfactory from the practical standpoint.

From the theoretical standpoint the same filter (see Fig. 11) produces perfect orthochromatic rendering re-

gardless of the spectral composition of light illuminating the set. In practice it is customary, however, to use a much lighter filter when a set is illuminated by radiation in which the longer waves predominate, such for instance

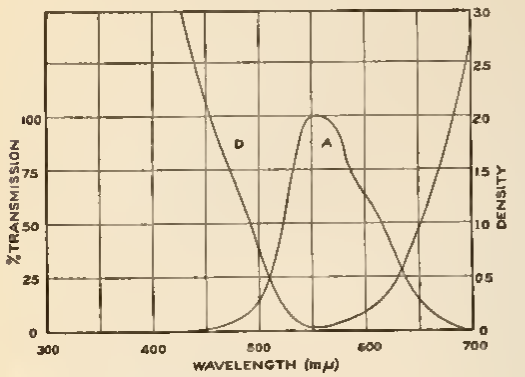

FIG 11 Spectrophotometric density, *D*, and transmission, *A*, curves of a theoretically perfect orthochromatic filter adjusted to Eastman Panchromatic Motion Picture negative film

as is the case with the light emitted by tungsten incandescent lamps. This can be explained on the basis of our subjective evaluation of colors as seen under artificial illuminants. Under such conditions red and yellow objects actually appear to the eye much brighter in proportion to the gray scale and to the blues and violets than under conditions of natural illumination. Subjectively, however, they are interpreted as having the tonal value which they would have were they illuminated with white light. In using a lighter yellow filter for working with tungsten we are therefore approaching to the rendition of colored objects on the brightness scale as it would appear to the eye if the colors in question were illuminated by white light.

Distortion of Orthochromatic Reproduction

Remembering now that the total visual contrast between the colors which compose the visual field may be due either to *brilliance-contrast, hue-contrast,* or *saturation-contrast,* it is evident that one or two of these factors may be entirely absent leaving sufficient contrast, due to the third factor, so that objects in the field of vision may be clearly differentiated from each other. Thus it is quite possible, and as a matter of fact this frequently occurs in practice, to have two or more colored areas precisely equal in brightness (brilliance contrast equal to zero) but clearly differentiated from each other by virtue of either hue-contrast or saturation-contrast or a combination of these two factors. Now it may be considered that the primary object in making a photograph is to reproduce the visual appearance and to show structural details of the material within the visual field. It seems therefore that the most satisfactory photographic reproduction is one which reproduces as nearly as possible the *total visual contrast* existing between the various elements of the object rather than the correct reproduction of a *single factor* upon which total visual contrast depends. If brightness-contrast is absent it is necessary to take advantage of the existing hue or saturation-contrast to obtain a photographic reproduction containing the contrast essential for the rendition of the form and detail in the object. For this purpose we have available only variations of brightness-contrast in the negative and hence we must attempt to express by means of this single variable those visual contrasts which depend upon three independent variables. Hence if two areas in the visual field are equal in brightness it is only by destroying this equality that an existing visual contrast due to hue or saturation difference can be made manifest in the negative. Distortion of the correct reproduction of brightness values therefore is a very real necessity in some cases and by the use of light filters practically any desired distortion of this brightness scale can be obtained.

The principles involved in obtaining brightness distortion are relatively simple and once understood no difficulty should be encountered in applying them to practical problems. As a convenient starting point in this discussion let us assume a light filter and photographic material (panchromatic) giving perfect orthochromatic rendering. Now it is obvious if it is desired to render by differences in negative density two areas of different hues but of equal brightness it is only necessary to use an additional light filter which will absorb to a greater extent the radiation coming from one of the areas than it does that from the other. Furthermore, it is evident that either one of the areas can be rendered as lower or higher on the brightness scale by a proper choice of the absorbing filter. Light filters for this purpose are usually termed *contrast* filters since they are designed to enhance the photographic contrast existing between colored objects. The general rules applying to the use of contrast filters for the distortion or enhancement of brightness-contrast may be stated as follows:

To render a color at a point on the brightness scale higher (enhanced brightness) than its normal position a light filter which *selectively transmits* radiation of the wave-length corresponding to the color must be used.

To render a color at a point on the brightness scale *lower* (depressed brightness) than its normal position a light filter which *selectively absorbs* the radiation of wave-length corresponding to the color must be used.

TABLE 1

Object

Color	Wave-length
Red	600 to 700mμ
Green	500 to 600
Blue	400 to 500
Yellow	500 to 700
Blue-green	400 to 600
Magenta	400 to 500
	600 to 700

Filter to Enhance

Color	Transmits
Red	600 to 700mμ
Green	500 to 600
Blue	400 to 500
Yellow	500 to 700
Blue-green	400 to 600
Magenta	400 to 500
	600 to 700

Filter to Depress

Color	Absorbs
Blue-green	600 to 700mμ
Magenta	500 to 600
Yellow	400 to 500
Blue	500 to 700
Red	400 to 600
Green	400 to 500
	600 to 700

In Table 1 the application of these two rules is shown. In the second column are shown the wave-lengths of radiation corresponding to the colors as designated in the first column. In the third column are shown the filters which must be used with each color in order to produce an enhancement of its visual brightness value. These filters are described by giving the color name applying to them and the wave-length region in which they are transmitting radiation. In the last column of the table are shown the filters which must be used to produce a depression of the brightness value of the color as indicated in the first column. It will be noted that for enhancement, the color of the filter corresponds to the color with which it must be used, while for depression, the color of the filter is complementary to the color with which it must be used.

Filters for the depression or enchancement of brightness, contrast filters, must as a rule be fairly "sharp cut" filters in order to produce effects of sufficient magnitude. Practically all colored objects met with in practice have spectrophotometric reflection characteristics of the "gradual cut" broad absorption or reflection band type. The spectrophotometric curve of two colors which exhibit marked hue contrast, therefore, usually overlap appreciably, that is, each embraces partially the same spectral region. To produce appreciable enhancement of depression of one of these with respect to the other a filter of rather sharp cut is therefore usually required.

Direction of distortion. When two areas of equal brightness but differing in hue or saturation are to be photographed a decision must be made as to which one shall be made darker and which lighter than its normal value. It has been found by measurement and observation that those colors which reflect radiation in the region 550 to 700mμ have in general higher reflecting powers (for the radiation which they reflect) than those which reflect radiation of wave-length shorter than 550. The former include those colors described as red, orange, yellow, and yellow-green and as a group may be referred to as the *warm* colors. The latter, violet, blue, and blue-green, are called *cool* colors. The non-spectral hues, the purples, reflect both red (600 to 700 mμ) and blue violet (400 to 500 mμ). Those in which red (600 or 700 mμ) and blue-violet (400 to 500 mμ). Those in which red predominates, the red-purples, are classed with the warm colors, and in general are relatively high in reflecting power. The purples in which blue predominates, the blue-purples, are classed with the cool colors and tend to have relatively low reflection factor. The best general rule to be followed in deciding the direction of distortion is to make the warm colors lighter and the cool colors darker than called for by orthochromatic rendition. This rule is based on sound psychological reasoning. Since the brightest colors of our past experience have been almost invariably those which fall in the warm classification, and the darker less brilliant ones have been found among the cool colors, in the absence of any hue or saturation factor the subconscious action of memory or stored sense impression tends toward an interpretation of the high brightness as representing a warm color rather than the reverse.

It is interesting to note that the use of ordinary blue sensitive or orthochromatic photographic materials produces a distortion of brightness reproduction which in many cases may tend to the conservation of the contrast between objects of colors which if rendered on panchromatic materials by orthochromatic methods would not show adequate contrast. This distortion, however, is in the wrong direction and always renders the warm colors as much darker than cool ones of equal brightness. There is little doubt that this is undesirable and that the rendition obtained with panchromatic film, with properly chosen contrast filters when necessary, will give more satisfactory results.

The photographic worker who has for many years been accustomed to using orthochromatic film frequently feels when he first uses panchromatic materials that it does not give as much contrast and may criticize the material as lacking in contrast capacity. Measurements show that panchromatic film exposed either in the sensitometer or in a camera to a neutral gray scale gives a D-log E characteristic having a slope, fully as great as the Par-Speed or Super-Speed orthochromatic film. It is probable that the worker being accustomed to seeing all reds and yellows rendered as unduly dark has acquired a false conception as to the actual brightness contrast in the original. Hence the rendition obtained with panchromatic film appears to him as lacking in contrast, while as a matter of fact it may be much nearer to the true visual contrast of the object than that obtained by the distorted rendering given by orthochromatic materials.

Magnitude of distortion. Another problem which must be considered in the distortion of orthochromatic rendering is that dealing with the *magnitude* of brightness distortion requires to compensate for the absence of hue and saturation contrast in the reproduction. The sensitivity of the eye to brightness and brightness differences has been studied with great care and the formulation of the requirements for reproducing precisely this factor is relatively simple. Unfortunately the hue and saturation characteristics of the eye have not been so carefully investigated and these functions for the average normal human eye are not at present established with certainty. No quantitative data are available which may be used to compute just what proportion of the total visual *contrast* in the case of colored objects is due to each of the three components of contrast. It is difficult to estimate therefore just how great a distortion from correct orthochromatic reproduction is necessary in any case to represent satisfactorily the hue or saturation contrast which may exist in the absence of brightness-contrast. However, it seems probable that the subjective contrast between two colors differing only in hue is directly proportional to the number of least perceptible hue steps between the wave-lengths of the two hues in question. On the basis of this assumption it is evident that a blue and red of equal brightness will require a greater separation on the brightness scale to satisfy our requirement of contrast in the reproduction than, let us say, a red and a green or a red and orange which lie closer to each other on the hue scale. The same reasoning is applicable to the magnitude of brightness distortion required to compensate for the presence of saturation contrast in the absence of either hue or brightness contrast.

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[3] M. G V. Potapenko. J. Russ. Phys. Chem. Soc. *48* 790, 1916. Brit J. Phot. *68*, 507, 1921.

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The Motion Picture: A Business

(Written for The American Cinematographer)
By J. HOMER PLATTEN
Treasurer, Motion Picture Producers and Distributors of America, Inc.

A banker was speaking of the motion picture industry.

"My bank in California," he said, "often lends as much as $7,000,000 at one time to motion picture producers, and we have never sustained a loss in this business. I believe that is an exceptional record which invites the admiration of everybody. When I came to New York, eight years ago, it was easy to get an entree to the executive offices of a motion picture concern; they were looking for the banker. Today, we have difficulty in seeing these executives because there are so many bankers knocking at the door."

I have been quoting Dr. Attillo H. Giannini, president of the Bowery and East River National Bank, as evidence of the changed attitude of business men toward the motion picture industry. Dr. Giannini's experience is, I believe, typical. The motion picture has become a business. Investments today are safe and sound. Banks want to do business with the industry. They have confidence in it and in the integrity of the men who conduct its affairs. More than 63,000 individuals have invested their money in the stocks listed on the New York Stock Exchange.

Once upon a time there might have been some justification for believing that the motion picture industry was operating along haphazard lines. Chaos and a certain confusion did exist. Men were seeking golden opportunities for great wealth and they did come into the industry seeking that wealth. The highest ethical practices probably did not always actuate them. Waste was inevitable before the readjustment stages set in.

But such conditions could not continue for long. Sane and sensible methods of doing business were inaugurated. Executives from other businesses—bankers, business men—were placed in key positions. They were not long about eliminating the feverish nonsense. They couldn't afford to take chances. It takes money to make pictures and to build fine theatres, and producing companies and distributors must be financed. Bankers were not disposed to put their money into futile schemes carried out by fantastic men.

The bankers didn't, of course, expect the companies to standardize their product because motion pictures do not lend themselves to standardization, in the sense that soap and sealing wax and canned goods can be standardized. The motion picture is the product of the mind, and brains cannot be cut to pattern. But they did insist, and rightly, that pictures be made which would yield a just return on the dollars invested, and that the business be conducted in such a manner as to insure, in so far as is possible, adequate profits.

There isn't anything mysterious about the motion picture's development as a business. Romantic—yes, but not mysterious. No wizardry was invoked to place the industry in the position it occupies today as the fourth largest American business. Rather it was due to the unbroken fulfillment, throughout its existence, of the same two demands—first, of the universal demand for recreation and amusement; and, second, a demand always of having that entertainment at a price within the means of all. The industry has consistently offered to consumers a product which has met, and which often is ahead of, current dramatic taste, and it has done so consistently at a reasonable price.

The set-up of the industry today is orderly. The machinery of production running smoothly in Hollywood dovetails in with the machinery of distribution running in thirty-three key cities where exchange centers are located. Film Boards of Trade, operating in these key cities, provide the medium of contract between the buyers and sellers. Boards of arbitration in these same cities, each composed of three exhibitors and three distributors, settle disputes that arise. A Standard Exhibition Contract exists serving to keep down misunderstanding and confusion.

The working of arbitration alone—and it may interest you to know that the motion picture industry, one of the youngest industries, has become pre-eminently the outstanding example of the use of arbitration—the working of arbitration alone is conclusive proof of the industry's stability.

In four years, 50,006 contractual disputes, involving $11,230,298.94 have been disposed of.

Last year, of 15,451 controversies, involving $4,269,752.06, the boards of arbitration disposed of 14,336 cases involving $3,825,636.76.

Four thousand six hundred and seventy-one claims were settled before submission to arbitration. Two thousand three hundred and sixty-eight claims were withdrawn after submission to arbitration. Six thousand five hundred and ninety-three claims were considered by the boards, of which four hundred and twenty-six were dismissed. Thirty-six required a seventh arbitrator. Five claims were litigated before submission to arbitration. Sixty-two were litigated after submission to arbitration Of these, only nine were court proceedings made to enforce compliance with the awards.

At the end of the year 1927, 1,095 claims remained undisposed of.

"The motion picture industry is setting an example to other trade organizations, and to the business world in general, of the least expensive and the speediest way in which to keep their business relations on an equitable and amiable basis," according to Lee J. Eastman, chairman of the Trade Board of the American Arbitration Association.

This is but one example of how business methods are being employed to keep the keel of the industry level.

Early in 1922, the producers and distributors joined in organizing the Motion Picture Producers and Distributors of America, Inc., which has for its purpose: "The object for which the association is created is to foster the common interest of those engaged in the motion picture industry by establishing and maintaining the highest possible moral and artistic standards of motion picture production, by developing the educational as well as the entertainment value and the general usefulness of the motion picture, by diffusing accurate and reliable information with reference to the industry and by reforming abuses relative to the industry."

The association was, in fact, to function as a clearing house on policy matters relating to the industry and its key-note was, and is, confidence and cooperation between the various branches of the industry and between the public and the industry.

Shortly after the formation of the association, certain broad policies were put into effect. In the matter of general studio efficiency, improvements in working schedules were instituted with the result that the personnel not only functioned more steadily but also more efficiently and, of course, more economically. Excessively competitive bidding between producers for the services of stars under contract to other producers was given attention as well as a careful dovetailing of production schedules to the end that there might be a more consistent demand for the services of both actors and "extra" talent. The previous irregular change from months of production

activity to months of comparative idleness has been succeeded by a year-round production program which is subject to budgetary control. Welfare conditions in the studios have lately been recognized by competent authorities as the equal of those existing in older industries. The studios themselves, both plants and equipment, represent an enormous investment and embody the most up-to-date features of well-managed manufacturing units, in which America excels. As to the pictures themselves, they are being made from the best available material, classical and modern, from the best that the arts of literature and drama have to offer and supplemented by the original creations of the screen's own contribution, the scenario. These works are being picturized by directors who not only have a keen appreciation of commercial values, but also are alive to the influence of the screen on the manners and customs of their times. It is the awakened sense of pride in the industry that is in a large measure responsible for the high average of successful pictures, commercially and artistically, which have been produced in the last four years or more.

Steps were taken by the industry also to see to it that the public was generally informed as to the investment standing of the motion picture business. In cooperation with the American Bankers Association, the Investment Bankers Association, the National Association of Credit Men, and the Associated Advertising Clubs of the World, the industry entered upon a consistent program having for its purpose the placing of the public in a position to discriminate between the soundly financed, well-managed motion picture companies and those concerns which were from time to time promoted by individuals who were not actuated by honest purposes and who sought to obtain the support of the investing public with no real intention nor ability to see to it that the investor received adequate returns for his capital advances.

In conclusion, it is safe to say that the making of a motion picture today is as much of a business as the making of an automobile. There is nothing magical about it; and certainly nothing which resembles a mysterious game.

It is, to the contrary, a definite job performed by a group of experts in various activities, operating under an executive head.

A story is selected because someone who is an expert in judging human desires and wishes in terms of amusement considers that the story will, when well interpreted on the screen, entertain a great many people. It is turned over to an expert continuity writer who selects and outlines the dramatic incidents which can be photographed. Actors, with ability to portray emotions, are chosen for the roles, and the whole is intrusted to a director who is constantly in touch with experts in other directions—with builders of sets, with electricians, with cameramen.

Throughout all of this work, supervision of costs, estimates of returns on the investment, and statistical study of the stars' drawing power all are kept under strict surveillance. When the picture has been completed, it must conform as nearly as possible to the restrictions which sound business methods put upon it.

It Is Now Col. Stuber

W. G. Stuber, president of the Eastman Kodak Company, has been appointed a colonel on the staff of Governor Flem D. Sampson of Kentucky, in recognition, according to the announcement, of his achievements in the worlds of business and photography. Mr. Stuber is a native Kentuckian and it was as such that he was honored.

Colonel Stuber came to the Eastman Kodak Co. in 1894 after building up a photographic materials business in Louisville. The responsibility for the success of the Eastman Kodak Company is in no small measure due to him. From the position of vice-president of the Eastman Kodak Company in charge of photographic quality Colonel Stuber succeeded Mr. George Eastman as president in 1925, when Mr. Eastman became chairman of the board of directors.

Pictorial Composition

Short Cuts to Results Through Study of Methods of Those Who Have Achieved Success

Lewis W. Physioc

An art student once asked his instructor what was the best way to acquire a knowledge of composition. The instructor replied that it could not be learned, but that it was an inate sense, developed by much experimentation, proper environment and a study of the best works of art. His answer was an earnest one but flavored a little too highly with that tendency, on the part of many artists, to distinguish their high calling by always encouraging the idea of their super-natural endowment, special talent, etc. But we cannot be persuaded to relinquish the belief that even the most talented students can be relieved of a great deal of labor and precious time, if furnished short cuts to results by studying the methods of those who have gained distinction. These hints are well worth while if they do nothing else than excite the mind and stimulate the ideas, as suggested in that instructor's evasive answer.

Lewis W. Physioc

Now, as a mater-of-fact, some very well defined rules of composition, in all branches of art, have been formulated by students, during the various periods of the evolution of art; by dissecting and analyzing the works of the masters, in search of the motives that directed certain effects and the reason for the appealing elements of the great successes. Thus, they have established various schools of proceedure which have aided them in reaching, more rapidly, an encouraging degree of proficiency.

It is interesting to allow our imagination to revert to the time when any ideas of art were first conceived. In our fancy, we see one of our ancient ancestors, whose mind was beginning to emerge from that benighted state of the purely animal existence; when he began to contemplate the marvels and beauties of nature—like old King David, when he exclaimed "when I behold the stars, Thy handiwork." It seems that their first thought was to represent these beauties, in some form or another, that they might inspire their fellows with this same love of the beautiful. There is a kind of primitive simplicity among artists and dreamers to share these mental delights—like a child who rushes to its mother when first it beholds the rainbow.

This ancient figuriste begins to realize the grace and beauty of the human form, and in acknowledgement, hews an image out of marble. He catches the singing twang of his bow-string as the wind vibrates it and gives this gentle tip of Aeolian harp, and he fashions his rude lyre and strums his tunes, that all the world may know the ecstasy of sweet sounds. He wanders beside some babbling brook, hearing all sorts of things in the cheerful chatter of its rippling waters and that none might miss its sweet message, writes his lyric poem. Thus our imagination furnishes us a vision of the birth of fine arts.

Now in studying the expressions of the old masters, we began by selecting what was most pleasing in the arrangement of their work—those portions that seemed to be more easily and accurately accomplished—what we would like to have seen introduced or what omitted, until we have gradually classified a system of technique to aid our future efforts. To illustrate this more clearly, let us imagine our beloved old Bach at one of his improvisations. His fingers wander just a half tone down the scale, which produces an effect that delights him. He writes it down before he forgets it—a little more boldness and he finds himself in another key, and this sudden transposition furnishes a new thrill. Other masters record these same effects, and then come the students who reason, that there must be a law that governs these beautiful effects and they give them such names as the tonic chord, the dominant, and diminished, modulations, etc., and again employ them with perfect success. In the same manner, Vignola classified the five orders of architecture, from the works of the ancient Greeks and Romans.

And, likewise, when we study the great paintings, we observe in one, certain elements and arrangements that agree, very generally, with another. A keen student points these out so clearly that we accept them as rules or formulae and give them names. Thus, we hear a great deal about "Hogarth's line of beauty" or the "sigmoid curve," the "beam of the balance" and many other such terms, and depend upon them, to a great extent, in conceiving our designs.

In applying the rules of composition, we should first define some of these accepted terms.

Composition of Line. That governs the outline of objects and their arrangement.

Composition of Form: The individual outline and modeling of the objects of a picture whose arrangement is controlled by line.

Composition of Notan: A Japanese word signifying the relation between colors and light and dark tones.

These are, likewise, divided into two sections.

Constructive Composition: The elements being invented and arranged independently—an original conception, or a modification of chosen subjects, the grouping of figures, etc.

Selective Composition: Such as in landscape photography, where the subject is sought or chosen to fit, as nearly as possible, the requirements of taste or the knowledge of these rules.

The accompanying sketches may seem very simple and childish, but they are extremely basic in principle and demonstrate, very clearly, some of the common errors and how to avoid them. However limited these suggestions may be, they may aid some one who may be interested in the subject, but who hasn't the time nor the opportunity to study it more seriously.

1. Shows the picture bisected, both divisions being of equal area and like form, and consequently of no pictorial suggestion, for neither furnishes any value to the other. This illustrates a very common error, in locating the horizon of a picture.

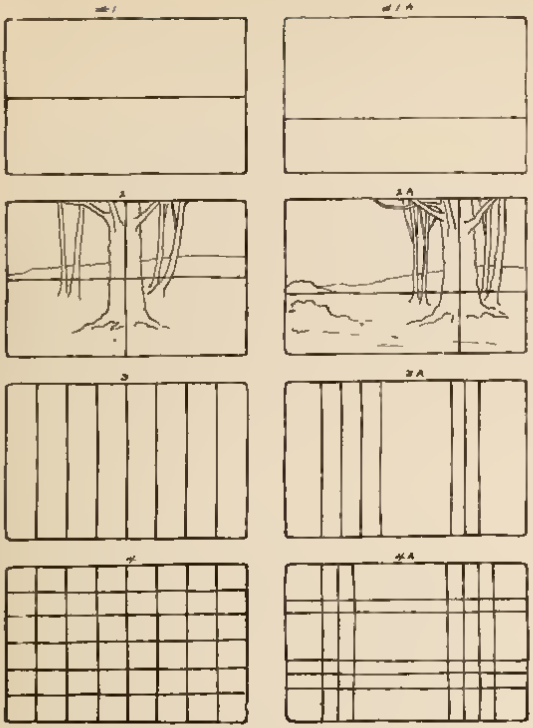
1A. The same frame properly divided, about one third of the area. Some times the area is placed at the top, where great height is required—the rule being, that the horizon rises with the eye of the observer. This frame immediately excites the imagination. We can almost feel the effect of sky and water or a great, flat plain.

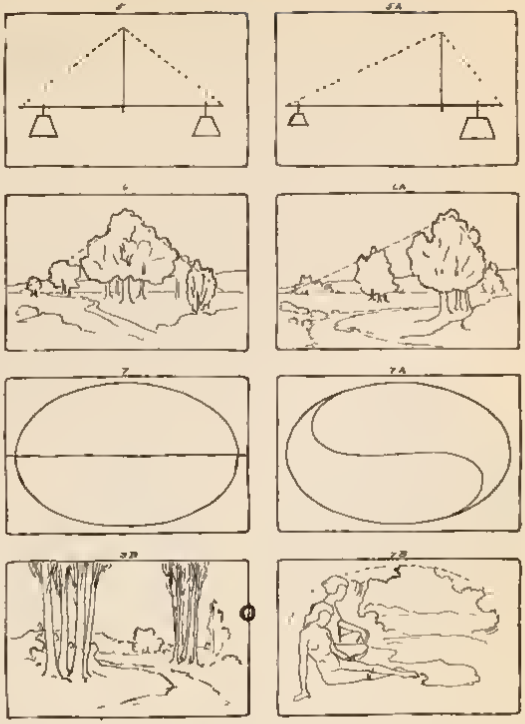
2. The frame divided into four sections, and the interest so scattered that the eye wanders from area to area without any relief. The pictorial outlines show another mistaken idea, that craze to center everything.

2A. The same, divided into four parts, but each of a different area and form, consequently, each having an individual interest, the effect is a harmonious interdependence between these areas that leads back to the point of interest and the eye rests, with satisfaction, on the group of trees that seem properly placed.

3. Showing a series of lines arranged without any ideal taste. It appears too silly to consider, but we can point out many instances in pictures where the forms are just as stupidly arranged.

3A. The same number of lines are here displayed with a little more interest. This is merely an attempt to illustrate that the simplest ideas are worthy of the best





treatment; the placing of articles on a table, the arrangement of furniture, the hanging of pictures, etc.

4. Another application of the same principle involved in 3 and 3A.

4A. Demonstrates that even the ancient Scots inherently recognized this thing we call composition or arrangement, by taking the same number of threads, in weaving their plaids, and designing patterns of great beauty.

5. Represents the idea of the balance or the triangular effect so much employed in composition, but made too conventional by an equal division of space and distribution of weight. This scheme is only good for repetitional design.

5A. Shows that the idea of perfect balance may be maintained with the fulcrum well away from the center of the beam; not only a mathematical fact but pictorial tradition. This principle is possibly the most universally used of all the elements of composition. It offers such pictorial possibilities as to be almost an inviolable rule among landscape painters.

6. Is an application of No. 5. The elements of the picture are so placed as to divide the interest. The eye becomes uneasy and roams around, finding no rest but at the apex of the triangle and then is annoyed by shifting back and forth between the two similar areas of sky.

6A. Demonstrates the proper application of the balance idea. Here, the sky is an interesting area in itself, and leads the eye very gently from the distance, at the acute point of the triangle, to the main features of the picture, where it rests with satisfaction.

7. Shows the circular form bisected, equally. This checks the imagination so that it seems hopeless to conceive of a pretty arrangement, except for certain advertising matter with lettering in the lower division.

7A. It is not difficult to choose between this example and No. 7. This beautiful figure is said to have been invented by the ancient Japanese, who have furnished us beautiful examples of composition. This sinuous dividing line was later called the sigmoid curve, from its similarity to the early greek letter Sigma and our S (this view being reversed). This graceful line leads our fancy on and on, beside winding streams, country roadways, folds of draperies, cloud formations. It is the pet line of the figure painters.

7B. Showing how figures may be arranged along this line.

3B. Another application of 3A. Very often, the composition of woodland scenes may be enhanced by shifting the angle of vision. Seen from one point, they may present an unbroken, even row across a flat field, but a different approach may separate them into interesting groups—some furnishing a fine foreground feature and others leading off into the distance.

In conclusion, we should do well to distinguish between merely copying the successful work of others, and a general study of all things beautiful, that we may become more appreciative and keener observers, broadening our conceptions by deep contemplation. When we reason out the solution of a problem we are furnished with the key to innumerable combinations by which we may exercise our individual ingenuity. The greater our knowledge of the various techniques and formulae the more rapidly we can develop a personal style.

There is one great advantage to composition of the camera. We are concerned in representing nature, and nature has mysterious, beautiful moods, bold and dignified in its subjects, divine in its conception, and we can disclose to the world the breadth of our own souls in the manner in which we select what nature offers us.

Bert Glennon, A. S. C., is the newest addition to the ranks of motion picture directors. He just recently signed a contract to direct for F. B. O. picturas and his first production will be one of the company's big specials, "The Perfect Crime," a story by William LeBaron based on Israel Zangwill's "The Big Bow Mystery."

Mr. Glennon has long been one of the leading cinematographers of the industry, having been director of photography on "The Ten Commandments," "Hotel Imperial," "Underworld" and many other outstanding photographic successes. His promotion to a directorship is a just reward for his excellent work in the field of photography.

Panchromatic Make-Up

By Max Factor

[This is the second of the three papers on make-up to be written by Mr. Max Factor for exclusive publication in the AMERICAN CINEMATOGRAPHER. A careful reading of Mr. Factor's presentation of the make-up problem should help greatly to an understanding of the interesting subject.—Editor's Note.]

In my last article I covered the subject of make-up in general, touching lightly upon the matter of Panchromatic Make-up but since the last issue of the AMERICAN CINEMATOGRAPHER we have gone into the matter very thoroughly and have been doing an immense amount of experimental work with this type of make-up.

Max Factor

I am more than delighted to state at this time that the results from these tests moreth an exceeded my fondest expectations. As a result of these successful tests, two of the largest studios are now using the Panchromatic Make-up exclusively and a large majority of the others are beginning to use it, having come to the realization that this new type of make-up is a major improvement.

I feel that it would be most advisable for me to go into this matter carefully and to explain just why this new type of make-up is superior to the former type and to give herein a chart of types and shades which we have worked out and found to be most suitable. In my discussion of this phase of the matter, I wish to state that statements which I will make in this article will be frank and honest findings of my organization and I wish to impress upon my readers that they are given with the thought of making this article a frank and unbiased one.

Make-up can be listed under two distinct headings; one is the water base and the other is the oil base. We have been confronted for some time with the problem of which make-up was the best or most successful under every condition. We found, after much study and careful consideration, that the grease paint which has an oil soluble base was the most consistent. The reason for this is that a make-up with an oil soluble base will stand up under almost any condition. The intense heat from the light which I used in the making of Motion Pictures has no effect upon the grease paint and the color pigments are not affected by the strong light. The colors do not fade but keep their natural or original color. Furthermore, grease paint has proved in all of our experience that it will carry a higher degree of natural sheen to the human skin and does not appear flat as that of the liquid make-up.

Grease paint is much more flexible; in fact, if it is properly applied, it should be as flexible as the skin itself. Picture to yourself, just how an actor may feel if there is the slightest tendency to rigidness around the eyes or the mouth. The complete freedom and elasticity of the facial muscles is a necessity and we must at all times bear in mind that, if the actor or actress is in the least conscious of wearing a make-up, we have failed in one of the principle purposes of make-up. We, therefore, state that we are of the honest opinion that the best results in make-up, pertaining to motion picture photography, is only obtained through the use of grease paint together with the necessary sundry items.

The make-up with a water soluble base has the tendency to dry upon the face in such a manner that it does not allow the performer the freedom of muscle movement to give the face the elasticity which is necessery for true rendition of facial expression essential upon the screen. The pigments used in this type of make-up are such that they, unlike the oil soluble make-up, will not stand up under the intense lighting systems used in motion pictures. Then there is still another problem we are confronted with in connection with the water soluble make-up, and that is perspiration. The pigments contained in this make-up have a tendency to darken when coming in contact with perspiration. It is a known fact that certain portions of the human body perspire more freely than others, and we have found this to be true of the forehead and around the eyes and nose. In such cases, if there is a darkening of pigments, it will settle in these spots and not be equally distributed. As a result, the make-up is spotted and uneven. We cannot, therefore, under the circumstances whole-heartedly recommend a type of make-up that has a tendency to become darker or lighter, under certain conditions. In other words, we must have a make-up which can be depended upon under any and all conditions.

Now then, in the development of the Panchromatic make-up, we have disposed of many obstacles in the question of make-up for the screen. In the first place, we have developed the color pigments to such a point that the same ones are used in the powder that are used in the grease paint, making the colors identical in both. We have decreased the amount of make-up necessary to a minimum. But a very small amount of make-up is necessary to cover the entire surface of the face, will blend in with the natural color of the skin and, if properly applied, will appear natural to the naked eye. Heretofore, in the former make-up, it was customary to use a lighter powder than grease paint and with the constant repowdering, which was necessary during the day, the actor or actress did not photograph the same later in the day as they did in the first part of the day. They photographed lighter, but this has also been offset in the fact that powder, the same shade as the grease paint, may be used. The performer may powder as many times as he desires during the day without spoiling the photographic value of his original make-up.

Type	Panchro Cr. Paint	Panchro Powder	Panchro Lining	Panchro Lip Rouge
Girl Juvenile				
Blonde	22	22	21	6
Brunette	22	23	21	6
Dark	23	23	22	6
Men Juvenile				
Blonde	25	25	21	5
Brunette	25	26	22	5
Dark	26	26	22	5
Elderly Type				
Women	22	23	21	5
Men	25	26	21	5

For extreme types the color can be varied to suit conditions.

As I have stated earlier in this article, we have done a lot of experimental work and the Panchromatic Make-Up has been given a very thorough testing under a great number of varied conditions. One of the principal outcomes of such a test was the life-like, natural appearance of the subjects on the screen. In order to retain this appearance, it was necessary to produce different tones of Panchromatic make-up to suit the different types, such as blondes and brunettes. I have, therefore, set forth the combinations that should be used for each type and, if they are followed carefully, the best results will be obtained.

In my next article, I will give an idea as to the purity of make-up and cosmetics in general. There seems to be an opinion among certain people that cosmetics and make-up are injurious to the skin. Therefore, in the next article, I will give a detailed report on this subject.

"Stills Move the Movies"

An A. S. C. Tells How to Remove the Curse on Stills

By Oliver Sigurdson, A. S. C.

Still pictures seemingly have degenerated into a sort of a modern curse inside the production end of the motion picture industry judging by the attitude of cinematographers, stars, directors and executives in general. Practically all of these film workers indicate a pronounced hatred of the so-called "stills." It is a condition hard to understand, particularly when the question is analyzed from all angles.

There is emphatic certainty that stills are the most highly valued and internationally effective form of publicity, advertising and exploitation. They are the one and only medium which requires no translation. Stills tell their own story regardless of all limitations of language. They are actually a tremendous power, yet the treatment they receive is what usually is accorded a pest. Everything demonstrates that stills are not known, not appreciated, not properly managed.

There is no stretch of the imagination which can rightly locate still pictures as being part of production. They are distinctly separate and should never be considered as anything but the finest form of publicity and salesmanship. Still pictures ought to be removed from all authority connected with production and put in the publicity department where they truly belong.

Investigation discloses many reasons for the lack of consideration at present manifested by the production department. It is apparent that making still pictures intrudes into the making of the motion picture film, therefore it can be readily understood that both the motion picture cameraman, the director and all his players are more or less distracted from that which they justly consider their own work. And so long as the making of the stills is in the keeping of the motion picture makers, exactly so long will the stills be cussed, hurried, mistreated and generally classed as an everlasting nuisance.

That entire attitude is all wrong—for no motion picture is a bit better than what it sells for. The best picture ever made is worthless if it is not seen by the public, and the best successes are those which have attracted the greatest number of people.

The general public is expecting advertising, demanding publicity, responding to exploitation. Without these no motion picture has ever developed into a genuine success. But with the right sort of salesmanship many pictures have become veritible gold-mines for their owners and the more effective the still pictures have been the greater the financial returns at the box-offices all over the world.

Good still pictures constitute a far greater advantage than poor stills a disadvantage. Good stills help a good film, or a bad one for that matter. Poor stills will not kill a good film and, unfortunately, will not kill a bad one. But good stills are a mighty valuable accessory to a good picture and an exceedingly efficient agency in producing good financial returns.

Good stills being so important it behooves every person concerned to produce them. This accomplishment will never materialize in the present line-up. There is only one positive remedy and that is to remove the making of stills pictures from the production department and make it part of the publicity department; then there will be notable improvement throughout.

Once the still pictures become part of the publicity department and are out of the control of the production officials and artisians there will ensue a far more friendly attitude toward stills than that generally exhibited at present. The stars and players could ill afford continually to antagonize the publicity department, as they are indirectly doing nowadays by their intolerance toward stills made under the direction of the production executives. There would soon develop a psychology of assistance and participation which is practically non-existant at this time.

When the still photographer is removed from the authority of the production men and made an important adjunct to the publicity department, then his still pictures will be made with pictorial publicity values ever in mind. These in turn will provide far more effective advertising accessories and in short it will be only a short time until the curse on still pictures is eliminated.

And it would be well to remember that the motion pictures are about the only manufactured product in all

(*Continued on Page 34*)

FIRE EVENT, AT WARNER BROS

BY KEN COFFEY

Photographed Akeley Camera Air Sequences for

"WINGS," Paramount
"LEGION OF THE CONDEMNED," Paramount
"NOW WE'RE IN THE AIR," Paramount
"HELL'S ANGELS,"
Current Caddo Production for United Artists

Complete, up-to-date Bell & Howell, Mitchell, Akeley and Eyemo Cameras.

FOREIGN OFFERS CONSIDERED.

American Society of Cinematographers Guaranty Building Hollywood, Calif.

E. BURTON STEENE

Cinematographer (Since 1912)

3306 North Knoll Drive Hollycrest, L. A., Calif. GLadstone 7238

The Ace of Stunts

By Walter E. Fitchman

Dan Clark, President of the A. S. C., has had many hazardous assignments in the course of his eventful career as a motion picture cameraman, during which he cranked first box for all of Tom Mix's great Western productions, but it is doubtful whether the intrepid Dan has ever drawn a more thrilling order than the command of Fox Films officials to take charge of the entire camera crew on the commercial aviation story directed by Howard Hawks and as yet untitled.

During the shooting of this picture Dan Clark estimates he has travelled 30 000 miles.

When Clark left the service of Tom Mix he was told by the executive heads of the Fox organization that they had in store for him the most pretentious undertaking ever suggested for the ace of stunts. Clark smiled. This, to him, was old stuff. If there could be any more thrills in the film world than those he had encountered in the past ten pears he was willing to be convinced that this would be a hard task.

An aviation story such as Hawks is making, however, proved to be literally packed with thrills. In the first place, fifteen cameras were required for the many intricate shots required by Hawks and Clark, in addition to cranking first camera, found it necessary to supervise the activities of some of the finest experts in the business. In constant use were two Mitchells, two Bell & Howells, four Akeleys, two Eyemos, two DeVrys, two still cameras, two Graflex and other camera equipment.

Clark has been shooting six weeks and for the greater part of this time he has been "up in the air." He estimates that he has traveled thirty thousand miles on the wing.

Furthermore Clark was called on hy Hawks to instruct the respective actors in the proper use of emergency equipment. Carol and the masculine players were taught to fly weeks before the picture entered production. Mr. Hawks wanted them to do their own stunts. In addition small cameras were attached to their planes.

"At times," said Clark, "we had some interesting and unusual experiences. We found that altitude played some queer pranks on us. At great height it was discovered that the cameras worked too fast or too slowly, as the case might be, and we could never tell in advance what we were going to have in the box. Only the developing trays could unfold this dark secret.

(*Continued on Page 34*)

We Hate to See Him Go

The Cinematographer regrets to announce the departure from Hollywood of Mr. Georges Benoit, one of the veteran members of the A. S. C. and a cinematographer of international reputation. For twenty-one years Mr. Benoit has been a cinematographer, sixteen years of this time in studio service in the United States. He is a master of all branches of his profession and has an impressive background of production to his credit to which he may point with pride. Being a native of France Mr. Benoit feels called upon to return to his mother country to round out his career in the service of the cinema and with his wife and infant daughter will sail for England early in May.

Georges Benoit

While we greatly regret the departura of Mr. Benoit, his host of friends in the A. S. C. are happy to congratulate him on his bright prospects in France and wish him much success and prosperity.

Mr. Benoit will retain his affiliation with the A. S. C. and henceforth will represent the A. S. C. and THE AMERICAN CINEMATOGRAPHER in Europe with headquarters in Paris.

Hail, Georges, and farewell!

Mazda Tests Screened

On Tuesday evening, April 17th in the Auditorium of the Hollywood Chamber of Commerce were presented to the members of the Society of Motion Picture Engineers and to a number of producers the screen results of the extensive tests conducted by the A. S. C. in order to ascertain the photographic qualities of the incandescent filament lamps in connection with motion picture work.

Nine thousand feet of positive film were selected from nearly eighty thousand feet actually "shot" so that the comprehensive exhibition could be condensed in as short a time as possible.

The reels were arranged so that comparison between arc and mazda lights could be made, also a comparison of color rendering under both systems of illumination. This was followed by a reel illustrating the highest efficiency obtained with the present mazda equipment, a reel of "light effects" proving the possibilities inherent to this system of illumination and finally, some of the imperfections detected in the manufacture of lamps and reflecting surfaces were clearly illustrated. These imperfections have already been corrected in the newest type of bulbs and lamps and were presented merely as a historical document.

The gigantic task of editing these reels was conducted by Mr. Frank Good, A. S. C. and his intelligent work won the plaudits of all present and especially of all producers who expressed their appreciation of the value of this climax of the extensive investigation carried throughout the "Mazda marathon."

Motion Picture Research

By L. A. Howland

(International Kinema Research Corporation)

Motion Picture Research as applied to what is shown on the screen covers generally:

1. Buildings, both interior and exterior, and streets.
2. What happens in the buildings and on the streets.
3. The type of people to be shown in the buildings and on the streets, what they wear and how they act.

The producers, after facing the fact that over 3,000,000 Americans have gone into every country of the world during the last seven years, have concluded that it would be an insult to the intelligence of any man, woman or child to depict any country carelessly.

For modern research of Foreign and American subjects, that is, covering a period during the last five to ten years, photographs taken by specially trained operators have been the answer for construction details of buildings, lay-out of streets, etc. The studios demand this special type photograph which is known as a "research photograph" as it is taken without traffic or people obstructing the buildings and thoroughfares.

Wardrobe is a very special item covered by research photographs, that is, the various angles and closeups of costumes, shoes, collars, hats, etc.

The casting departments are depending more and more on pictures of natives of foreign countries and beginning to learn that there are blondes in some parts of Spain and Italy—that shieks are not always the smart and clean looking heart-smashers that the PG (Pre-Griffith) day producers wished us to believe. Also they are learning that because someone (who most likely was a "ten-hours-to-see-each-city" tourist) has said or written that certain types of foreigners are slim or short or fat, it does not make it so. The casting departments must have research photographs of actual people who are typical.

The property departments also use research photographs of the many items of furniture and set dressing. Hearsay no longer governs them.

The location managers match up American-California locations with research photographs of the streets of the foreign country to be shown in the film or scenes of other parts of that country.

In fact, about the time the story is planned, the Research Department, Art Department, Wardrobe Department and Casting and Location Departments are busy determining from research photographs the typical facts of the foreign country and walk of life to be filmed.

When the set is built and dressed and the wardrobe made for the actors who have been selected, then what is known as the "technician" starts his work on the set. He may have been working for the past month with the director and scenario writer, supplying from his mine of information concerning his own country, typical bits of business and atmosphere.

The foreign technician and his American brother technician are ready and willing on the set to show typical manners, methods of walking, salutations, tokens of courtesy actually used in their country and particular walk of life, especially covering servants and military people.

He checks up to see if the actor is correctly dressed. He watches the set to see that there is not too much "Grand Rapids" furniture in the foreign castles or in the North African tents.

A Foreign or American technician who is authentic, is a form of insurance against irritating errors in the picture.

Especially is an authentic technician of use during the filming of war, water or foreign pictures. His knowledge of procedure may help to get the picture over. Alas, several excellent stories when put into motion pictures have had their earning capacity cut down, due to the use of men who posed as authentic technicians but who did not have the experience in the foreign country filmed or who were unable to get along with members of the producing staff. As a result these men have allowed gross mistakes to creep into the picture which, when it was

shown in the foreign country depicted, so prejudiced the authorities that they banned the picture at once.

Scenes which reflect on the military, the police, or the government of a foreign country, naturally handicap an otherwise excellent story picture.

Of course for laugh-gettings episodes some license may be taken with certain established facts, but that does not permit of liberties to be taken with traditions and customs, which, to our foreign friends, are as intimate and personal as gross mis-representations on the part of foreigners of our West Point Academy and its traditions. Why should we expect them to welcome pictures about their country which are apparently deliberate lies put into picture form and which antagonize them. Make pictures authentic and they will earn more money and make more friends for America.

It may be that the bans and quotas are the result of incorrect American made pictures and then again it may be that our pictures of their countries, when sold and exhibited abroad, help us to sell too much of our American made merchandise.

Another very interesting branch of motion picture research is the "Insert Material Division." Everyone in the industry knows how vital small printed forms and documents are. So small an item as a Continental sleeping car ticket, as compared with the ones the Pullman Company issues in this country, is of great importance. Sometimes an authentic insert document will save cutting in a "wise-cracking" title.

I can hear a number saying: "Who cares if the picture is correct in detail, if it be entertaining?"

The people who care are the producers who will make more money when their pictures are not barred due to utterly ridiculous conceptions of foreign life being shown in the pictures. The natives of the foreign country whose life and customs are maligned are also among those who care, and lastly the vast number of Americans who have been in the foreign country shown in the film.

Incorrect details in pictures are an expensive evil. It has been proved again and again that correctness costs less in the long run.

Real life and real things are always more interesting.

Did the best painters, sculptors, etchers and other artists ignore detail? Most decidedly not, and as we call motion pictures an art, let us be artistic enough to be correct in detail.

Has Belasco's reputation for accuracy hurt him?

Historical research, for costume pictures, while perhaps appearing very dull to the unthinking, requires the skill of a Sherlock Holmes or an Arsene Lupin, plus good common sense.

Virgil Miller, who started Bert Glennon's first directorial effort at F. B. O. has been taken off the production to start experiments in connection with the "talking" movies which they are going to produce in connection with the Radio Corporation of America and The General Electric Co. Jimmie Howe takes Virgil's place with Glennon.

Program of Academy of Motion Picture Arts and Sciences

Monday, April 16, at 8 P. M.

Demonstration, exterior location, Garden Court Apartments, Hollywood Boulevard, with **green foliage** background to be photographed exclusively with Mazda lights, with a general invitation to all interested persons to be present. Committee in charge: Fred Pelton, chairman; Dan Clark, co-chairman; W. T. Strohm, Louis Kolb, Frank Murphy, Peter Mole, G. Gaudio, Hal Mohr, Victor Milner, Joseph A. Dubray, Percy Hilburn, George Barnes, John Seitz, George Meehan, Ned Van Buren, Gilbert Warrenton.*

Tuesday, April 17, at 8 P. M.

Screen Exhibition of edited demonstration film and of Monday night's shots to be projected in a theatre or room to be selected later, to which the entire Academy, the American Society of Cinematographers, visiting engineers, all technicians and interested persons are invited. Committtee in charge: Karl Struss, chairman; G. Gaudio, Victor Milner, Hal Mohr and Frank Good.

Wednesday, April 18, at 8 P. M.

Color Values. Papers and discussions on **color values** in relation to incandescent illumination, at an open session of the Academy in the Club Lounge, to be divided under two headings:

(a) **Artists' Make-Up,** 8:00 to 9:30 P. M., with papers by Max Fastor, Lon Chaney and Rod La Rocque, and an open discussion to follow. Special invitation to the entire acting profession, together with motion picture directors and cinematographers. Committee in charge: Joseph Dubray, chairman; Wallace Beery, Lois Wilson and Irving Willat.

(b) **Sets and Costumes,** 9:30 to 11:00 P. M., with papers by J. C. Okey, art director of First National, G. Gaudio, and L. A. Jones, past president of the Society of Motion Picture Engineers. Open forum discussion to follow. Art directors, technicians, cinematographers and motion picture directors especially invited. Committee in charge: Wilfred Buckland, chairman; Vannest Von Polglaze, James M. Leisen and Charles Rosher.

Thursday, April 19, at 8 P. M.

Technical. Papers and discussion, in Academy Club Lounge, with special invitation to all cinematographers and other technicians. Papers by (1) E. W. Beggs on "The Inside Story of Mazda lights," to be read by Bert R. Deleray of the Westinghouse Lamp Co.; (2) D. B. Joy and A. C. Downs, of the National Carbon Co., on "Characteristics of Flame Arcs," and (3) Wm. B. Rayton, Director of Technical Bureau, Bausch & Lomb Optical Co., and Joseph Dubray, A. S. C., on "Lenses and Their Relation to Incandescent Illumination," all to be followed by discussion. Committee in charge: J. A. Ball, Chairman; Joseph Dubray and Arthur Miller.

Friday, April 20, at 8 P. M.

General Meeting of the Academy with special invitation to the American Society of Cinematographers, and all other interested persons. Reports and findings of the demonstration committees, to be followed by discussion and resolution closing the series of Academy demonstrations and researches on the subject of incandescent illumination. Committee in charge: A. George Volck, Chairman; Fred Beetson, J. A. Ball, Fred Pelton and Frank Woods.

*This test was shot by President Dan Clark, First Vice-President John W. Boyle and Second Vice-President Frank Good of the American Society of Cinematographers with many of the A. S. C. members assisting. The editor regrets that the May issue of The Cinematographer must go to press before the transactions of the convention are available for publication.

On To Alaska

Chas. G. Clarke is leaving for Alaska, on Monday, April 23rd, to shoot hunting stuff for a big Fox opus. He expects to return about November 1.

There's Always a Way

By Euclid D. Miller
Cuban Telephone Co., Havana, Cuba

Last year I tried to make a progressive moving picture of some building operations, but soon found out that my limited equipment was not sufficient. However a rifle telescope sight, an old tripod head and a little automatic camera using standard film gave one hundred per cent success with little effort.

For the benefit of cameramen who may have occasion to shoot such jobs I'll go into detail.

The subject was to be the construction of a small office building. I found a location on the roof of an old tenement building that would show the completed building nicely through my two inch lens. I carefully set up the forty pounds of camera and tripod and marked the tripod setting after I had framed the picture to my satisfaction, and made a trial exposure. Next day at noon my assistant and I again climbed up the dark smelly stairs to the roof and, after about thirty minutes I thought I had the developed negative of the former shot which I placed in the gate exactly matched with the conspicuous landmarks within the scene, and shot ten or lfteen feet. When I ran the assembled negatives of about a week's daily climb I saw that there was too much of a jump, and that the negatives were not matched at all.

I robbed a war relic, a sniper's rifle from the Argonne, of its telescope sight and mounted it on an automatic camera which uses standard film and that on an old tripod head.

The procedure was to place the tripod head which was on a block of wood, upon a marked spot on a handy wall. Of course there were only minor adjustments to be made. The scope sight was mounted on an angle to the lense so that when the "picket" of the sight (it didn't use the cross-bair system) was on a distant church steeple, the camera was correctly "framed" on the work to be photographed. I selected this side "site" because the building would gradually come up and block almost everything in the "frame" and all the sky-line. This church steeple was out of the picture just as a gunner's "site" usually is in indirect fire.

However, I had to have a second point to be sure of everything matching. By throwing out the pan gear I could swing the sight around to a second "site" and when I had the camera adjusted for both sides, I swung it back to the church steeple ball, and let ten feet run through. All this would only take half a minute. The janitor would then place the whole outfit in his roof apartment where it was unmolested until he brought it out for me the next day. Every ten days I unloaded the 100 feet roll and had it developed. Needless to say it matched. Later on I tried to shoot when the shadows were at a certain place, whicb varied a little each day, but maybe that's too much refinement.

I had occasion to make a newsreel longsbot. Improvised a ten inch lens in the automatic camera again. Marked diagonals on my ground film frame and pointed it at a distant land mark, then adjusted the rifle sight to that point, and compared the "field" of the lens to that of the sight and made the shot all right.

Stills for Noah's Ark

Elmer Fryer, A. S. C., formerly under contract to DeMille Studio in the capacity of still photographer, has been signed by Warner Brothers to shoot stills on "Noah's Ark," the forthcoming epic of the flood, on which Hal Mohr, A. S. C. is chief cinematographer.

Fryer has been associated with the Metropolitan Studios for over two years and previous to that time he was affiliated with First National.

Besides the usual still photography for "Noah's Ark,' which Michael Curtiz is directing, Fryer will make all the special art work which this pretentious production embodies in atmosphere and setting.

QUESTION—A number of questions have recently reached this office, concerning the F. values of photographic lenses. This question is apparently of great interest to the amateur and so we devote to it the whole space allotted to this department.

ANSWER—It is quite evident that an optical system must he circumscribed within some physical houndaries which in the case of photographic objectives are defined hy the mounting of the system which is circular in form.

The size of the mounting is dictated hy the size of the lens elements that combine to form an objective, which in turn are calculated according to the local length of the objective, its angle of view and its orthoscopic qualities, i. e., the degree of correction of the different aherrations necessary to ohtain an objective giving the hest ohtainahle results under some specified conditions.

In taking a photographic record of an ohject, hy means of a lens, it is quite evident that of all the light radiations emitted from the object only those radiations passing through the lens will actually concur to the formation of the photographic image and therefore, the larger the area within the houndaries of the lens, the more of these light radiations will pass through it and the more brilliant will he the image that concurs to make an impression on the sensitive material.

It is quite ohvious that designers of photographic ohjectives have heen and still are striving to calculato lenses which admit the greatest possihle amount of light, in other words of the greatest possible aperture, without destroying the photographic qualities of the objective such as flatness of field, correction of spherical, chromatic stigmatic aherrations, that is to say without impairing the possihility of ohtaining a picture of the suhject which is as near as possihle, a true representation of the suhject itself.

It was a logical consequence of the attrihutes and form of construction of the objective, that it should hecome imperative to permit the regulating of the quantity of light admitted through it, to form the image. This was accomplished hy means of diaphragms or round openings of different size which control the aperture of the objective at will of the photographer.

The most used form of diaphragms is nowdays the IRIS form which, placed within the elements of the lens, permit a change from the widest aperture to the smallest, passing through all conceivahle sizes.

This need of diaphragms recognized and put into practice from the very heginning of the advent of photographic objectives, hrought ahout the necessity for an international understanding and accord on a logical principle that all manufacturers could follow in the way of estahlishing a standard expression of the measurement of aperture, applicahle to all objectives and readily read hy photographers of all countries.

At the International Convention held in Paris in the year 1900 it was decided that:

First—Each diaphragm he characterized hy a fraction of the form F/n in which F. represents the focal length of the objective and n. the numher ohtained hy dividing the focal length of the objective hy the EFFECTIVE APERTURE of the objective.

Thus an objective of 2 inches focal length is said tn work at F/3.5 when the effective aperture of the objective is equal to inches 2—3.5, and the same objective is said to he working at F/8 when its aperture is reduced hy means of the diaphragm eo that its effective aperture equals 2—8.

It is to he noted here that in a compound objective in which the diaphragm is placed within its elements, the effective aperture is always greater than the actual diameter of the diaphragm. This is due to the fact that the lens element in front of the diaphragm refracts the rays emitted hy the subject and striking its surface, so that they assume a conical form in their passage from the front element to the diaphragm. It results that the effective aperture of the objective is given hy the size of the original heam, which is evidently rather larger than the actual diameter of the diaphram. To find the effective aperture of an objective, focus on the ground glass of a camera on ohject at infinity, then replace the ground glass hy an opaque screen in the center of which a small round opening has heen drilled. Strongly illuminate this opening and place a ground glass against the mount of the lens in front of it. A luminous circle will thus he formed the diameter of which will give the effectivo aperture of the lens. The ground glass may he replaced hy a sensitive material, plate or paper, and after due exposure and development an image of the aperture will he ohtained, which can readily he measured.

Second—It was agreed at the Paris convention that markings on the mount of the objective should indicate the size of the diaphragms in a regular progression corresponding for each of its terms, to an exposure double of the preceeding The progression decided upon was as follows:

F/1, F/1.4, F/2, F/2.8, F/4, F/5.6 F/8, F/11.3, F/16, F/23, F/32, F/45.

Thus an effective aperture of F/5.6 will require double the exposuro required hy the aperture F/4, and an aperture of F/8 will require douhle the exposure of the aperture F/5.6.

When an objective is so designed that its maximum effective aperture does not appear in the ahove progression, this maximum aperture is marked on the mounting of the objective and is followed hy the next effective aperture of the progression.

Thus many ohjectives for motion pictures work are designed to work at a maximum aperture of F/3.5 and this aperture will he marked on the mount of the objective and will he followed hy the marking corresponding to the aperture of F/4, which in turn will he followed hy the markings F/5.6, F/8, etc.

The illumination, sometimes called the "speed," of an objective, is thus expressed in terms of the F value.

It results quite evident that to each of these F valnes a definite quantity can he calculated, which is called the coefficient of illumination of the F. value. The coefficients of illumination for the most used F. values are given in the following tahle:

F/n	Coefficient of Illumination	F/n	Coefficient of Illumination	F/n	Coefficient of Illumination
*1	1	* 5 6	31	*23	529
*1.4	2	7	48	29	841
*2	4	* 8	64	*32	1024
2.5	6	10	100	40	1600
*2 8	8	*11.3	128	*45	2025
3 5	12	14	198	58	3136
*4	16	*18	258	*64	4100
8	28	20	400		

The F/n values marked by (*) rapresent the regular progression established by the Paris convention, the other being intermediate valuss frequently used.

The co-efficient of illumination is, as seen in the table, given by the square of the F value, this heing due to the fact that the admission of light is controlled hy the

(Continued on Page 31)

An Erect Image Finder For the Akeley

By Ira B. Hoke, A. S. C.

In the operation of the Akeley panoram camera the cinematographer lines up his scenes through a direct tube magnifier. This magnifier serves not only as a focusing device, but when operated with a secondary lens matched in area with the photographing lens serves also as a view finder. While this finder is absolutely necessary when the telephoto lenses of 12, 15 and 17 inches focal length are in use, an auxiliary finder such as used on the dramatic motion picture cameras is of more practical convenience when lenses of wider angle are used.

Until recently, however, no finder was found which readily adapted itself to the Akeley camera. The reason lay in the fact that the Akeley tube finder shows an erect image, with left and right sides correct. Nearly all the old type of finders show inverted images. Their impracticability was immediately recognized by cinematographers when they attempted to switch quickly from the erect image of the Akeley to the inverted image of their finders. The impulse was always to pan in the wrong direction.

On July 9, 1920, Mr. Pliny Horne, A. S. C., veteran Akeley specialist, recognized the need of a secondary finder in a letter written to the Akeley Camera Company. In part, his letter is as follows:

——"Let me suggest one thing, and that is an auxiliary view finder; one that you do not have to put your eye so close to. I do not mean to eliminate the tube, but to add this sort of finder as an extra attachment."

About this time Mr. J. B. Shackelford, A. S. C., then in New York, also began experiments with a supplementary view finder. His first finder was along the lines of the Pathe inverted image type. This finder he adapted to the use of different focal length lenses by a series of mats, each giving a specified field of view corresponding to the lens for which it was matched. But like all inverted image finders this was tricky to use, and was not universally successful.

Probably the next type of finder experimented with was the Lubin direct image finder. This finder, while it showed an erect, corrected image lacked the accuracy necessary to successful Akeley panoram scenes.

No further progress seems to have been made until the advent of the Mitchell erect image finder in 1927. This finder, while quite large, has the advantage of showing an image of maximum practical size, erect and fully corrected. The margin limits for the various focal length lenses is determined by a series of metal mats which are inserted just in front of the ground glass after the manner of Waterhouse stops. The erect image feature is accomplished by a series of prisms, compactly arranged in a turret behind the objective. These two features adapt the finder perfectly to the Akeley camera as it is quickly fitted to match different focal length lenses, as well as showing an image corrected as in the Akeley tube magnifier.

The finder is mounted on the Akeley camera in two positions to suit different occasions. The first being directly on top of the camera; the second on the left side at lens level.

When mounted on the top of the camera the finder is in the accepted operating position, its objective in a direct line above the photographing lens. The finder is mounted on a sliding clamp which is movable around the periphery of the camera case, thus making the finder center adjustable to any focal length lens that may be used. This position places the image directly above the control bar of the camera and in the most balanced position for accurate observing.

The adjusting clamp furnished with the finder for attaching to the Mitchell or Bell & Howell cameras serves to secure it in position on the Akeley, and furthermore allows its ready removal when it is desirable to place the finder in the position on the left side of the camera. When mounted on the side of the camera the finder serves admirably where the set-up is so low that, if mounted on top, the finder would interfere with free movement. It is adjusted for different distances and focal lengths precisely as though it were used on either of the other professional cameras.

It often happens that the director wishes to look at the line-up or even watch the action as it is being filmed. When not in actual use on top of the camera the cinematographer may properly mat and correctly center the large finder in the side position so that the intended scene is instantly available for the director's inspection without the inconvenience, both to him and the cinematographer, of peeking through the focusing tube. As the finder in this position is several inches to the left of the magnifying tube the director can easily watch the scene as it is being photographed without interfering in any way with the operator.

Chief among the advantages of the new finder is the fact that through its use the Akeley camera becomes the finest machine available to the profession for the photography of scenes from moving vehicles. With the old eyepiece and finder tube a "running shot" was practically impossible with the Akeley because the eye could not be safely held in position. Fitted with the erect image finder the Akeley acknowledges no peer for this type of scene. The gyroscopic control of both pan and tilt movements effectually smoothes out the familiar "jumpy" action so distracting to such scenes when photographed with other types of cameras. Every cinematographer who has made running inserts is familiar with the difficulty encountered centering objects when rounding turns at high speed with the pan crank or slip-head camera to work with. This type of shot is negotiated so nicely with the Akeley that often an actual sensation of skidding around turns is conveyed to the screen. Pliability of the Akeley is also demonstrated in the case of running inserts where room to set up the more bulky cameras often binders efficiency of actual operation. If necessary, the Akeley is instantly removable from its tripod, after which it can be quickly placed either on a baby tripod or flat-base in cramped positions quite inaccessible to the dramatic cameras.

Prior to the advent of the erect image finder running scenes photographed with dramatic cameras were in most cases limited to moderately wide angle lenses, necessitated in order to keep the photographed subjects in the picture. Since the adaptation of this finder to the Akeley camera cinematographers are able to use the three, four and even the six inch lenses with extreme accuracy in photographing close-up action in running shots.

Several years ago the Akeley camera was considered somewhat of a curiosity, but today the director and producer recognize it as the most versatile photographic equipment obtainable, and there are few modern sets that cannot boast one or two fully equipped Akeley specialists.

Co-operation

The A. S. C. desires to express the sincere gratitude of the Society to the following named studios and A. S. C. members who so unselfishly, enthusiastically and efficiently co-operated in shooting, titling, printing, cutting and otherwise preparing and arranging the special trailers to be exhibited to the Photographers Association of America Convention at Louisville by Joseph Dubray and Charles Rosher, A. S. C., ambassadors of good-will.

Fox Studios—Daniel B. Clark, George Schneiderman, Elmer Dyer.

Edwin J. Snyder, Alvin Wyckoff, Frank B. Good, H. Lyman Broening.

Universal—Roy Hunter.

DeMille—M. Presbry.

United Artists—Charles Rosher.

Consolidated Laboratory.

The total footage shot was something less than 4000 feet and our reports from Louisville are that the film made a great hit with the Convention. The film was assembled under the personal direction of John W. Boyle, President of the A. S. C.

Questions and Answers

(Continued from Page 29)

AREA of the diaphragm and not by its diameter. This coefficient is inversely proportional to the illumination of the image obtained through its corresponding aperture.

For instance, suppose that we know that the correct exposure on an exterior in a sunny day of a certain city street will be correct at an aperture of F/8, and we wish to photograph the interior of a clear room which will require an exposure five times as great (this exposure arrived at by actual measurement of the intensity of the light or by judgment dictated by experience), and we wish to know which aperture will give us such exposure.

The coefficient of illumination at F/8 is 64, one-fifth of 64 is 12.6. The aperture corresponding to the coefficient 12 is F/3.5, which aperture will give an exposure 5 times as great as the F/8.

A very useful application of the table is to be found when using light filters whose multiplying factor is known.

For instance, we wish to use a K1½ gratten filter, whose filter factor is given by the manufacturer at 2, meaning that the use of this filter requires twice the exposure required without it. Supposing again that an aperture of F/8 would give the correct amount of exposure without filter, we would find the aperture to be used in connection with the filter by dividing the co-efficient of illumination 64 by 2. The quotient is 32. The nearest co-efficient in the table is 31 and the aperture corresponding to it is F/5.6, which is in the regular progression of the stops agreed upon by the Paris convention as requiring half the exposure of the next stop, F/8.

The filter K1, whose factor is 1.5, would under the same conditions require an exposure of 64 ÷ 1.5 = 42 6. The most approximate square root of 42.6 is 6.5, which is the F value desired.

As the value F/6.5 will not be found marked on the mount of the objective, the photographer will set the diaphragm by close approximation at about 1/3 the distance between the markings 5.6 and 8.

Reggie's Lucky Escape

Reginald Lyons, A. S. C., of 7538 Hampton Ave., now with Lasky Studios, had an almost miraculous escape recently at Clover Field. Lyons, with Jack Ford, Fox Studio director, was standing by a plane occupied by Vic Flemming, who was about to go up. As he was ready to take off Lyons and Ford started to leave the field when the propellor blade hit Lyons knocking him down. The wheels of the plane ran over him and he was dragged about thirty feet before he broke loose. Except for torn clothing and minor bruises Reggie was unhurt.

The Louisville Convention

During the period of March 27th to 30th an event of great significance took place. The American Society of Cinematographers was represented at the annual convention of the Photographers Association of America in Louisville, Ky., thus linking together the greatest exponents of the art of photography in America.

Mr. Charles Rosher and Mr. Joseph Dubray were the A. S. C. members commissioned to carry to the P. A. of A. the message of fraternity and good cheer from the A. S. C.

Their report is most enthusiastic both as to the courteous and really fraternal reception accorded to them in Louisville and the results obtained in solving technical problems discussed throughout the convention.

The portrait, the commercial and the motion picture

branches of photography had never had in the past such an opportunity of getting together and in a friendly way discuss their different problems and achievements for the benefit of all concerned.

The portrait photographers especially displayed a tremendous interest in the system of lighting used by the cinematographer and they paid a very high tribute to the artistry displayed in the photographic quality of modern motion picture production.

Mr. Rosher and Mr. Dubray were literally besieged during their stay in Louisville by interested questioners on the several phases of their work.

Several reels of film made in Hollywood, showing processes of production of motion pictures, which were

especially made by the A. S. C. with the co-operation of the Hollywood producers, were shown to the convention and were greatly appreciated for both their artistic and educational values.

Mr. Rosher and Mr. Dubray carried on some very extensive demonstrations by actually taking motion pictures of chosen subjects and of members of the P. A. of A. under the conditions that presented themselves in actual motion picture work.

These demonstrations included the application of

The Photoplay as a Civilizing Influence

The English press lately revealed two quite extraordinary instances, setting forth the ameliorative effect of the motion picture on the sordid side of life, firstly of London and secondly of Edinburgh J. A. R. Cairns, a magistrate who presides over the police court in the meanest part of London lately, in an address in the wealthy west end of London, said:

"If it is the human story told in the human way of virtue and goodness triumphing over vice and filth, that will make for good. I am certain the cinema is the greatest civilizing factor among us. Childhood is introduced into a world of harmonies and beauty, and adolescence and middle age have consolations and vistas of a bigger world than that of work and toil."

Rodney Ross, the chief constable of Edinburgh, lately reported a remarkable diminution in the number of street offences, basing the facts on an examination made by the Street Offences Committee. Mr. Ross said he "did not hesitate to name the cinema as one of the chief contributory causes. Official witnesses stated that prosecutions had declined in Edinburgh from 419 in 1920 to 129 last year, and in Glasgow from 2,700 in 1902 to 283 last year. Well might Dr. Hensley Henson say, 'the diminution was very remarkable,' and clamoured for an explanation. There cannot be the slightest doubt in the minds of reasonable people that the cinemas are a purifying influence on the streets of any town."

Incandescent Lightings

(Continued from Page 11)

will greatly increase the comfort of the electrical crews and of the Cinematographer in charge of a set, which comfort will result in greater efficiency and therefore in considerable economy.

The reduced size of the different lamp units will make it possible to conceal several sources of light throughout a set in small recesses and will result in an improvement in the distribution of the general illumination of the set.

The units used for spotting purposes do not need the constant attention of an operator as the Arc light spots do, and the decrease of weight of apparatus will tend to reduce the cost of construction of the platforms which are usually built to support them.

The greater portability of the incandescent units will facilitate the illuminating of the **trucking shots** so extensively used in modern production.

The operating cost of this lighting will be greatly reduced as it will be possible to dispense with costly generating plants and portable generating outfits.

Cleanliness is another important factor to be considered in the use of the Incandescent System of lighting. The necessity of recarboning the units is dispensed with at an economy of time and the suppression of the carbon dust which is stirred by this process particular to the Arc lights, and again cleanliness will mean greater efficiency in operation and consequently considerable economy in expenditure.

To conclude, it is quite apparent that although the Incandescent Tungsten system of lighting presents innumerable possibilities of improvement, it also presents some definite advantages on the Arc light system, and further study and experiments tending to bring this system of lightings to as near as possible a degree of perfection should be encouraged by producers of Motion Pictures and by Cinematographers.

Such studies and experiments systematically carried will contribute to the evolution of motion picture photography for the greater glory of our art and for its commercial and industrial development.

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make-up, and the improvisation of backgrounds suitable to the subject and to the general scheme of lighting.

Several addresses were delivered to the convention and on numerous occasions the appreciation of the members of the P. A. of A. was extended to the A. S. C.

The M. P. P. A. Research Laboratory

The announcement made by Mr. Fred W. Beetson, Executive Vice-President of the Motion Picture Producers' Association, at the banquet tendered to members of the S. M. P. E., on the night of Wednesday, April 11th, to the effect that the M. P. P. A. intends to establish a research laboratory in Hollywood, has been substantiated by Mr. Beetson.

Fred W. Beetson

A Research Bureau will first be established whose mission will be to study and investigate production problems in Hollywood under all conceivable angles as to their technical and artistic features, and to bring about close collaboration of all branches of the industry in order to improve the quality of their product and increase their efficiency.

The investigation will be extended to all manufacturing concerns throughout this country and in foreign lands, which are contributing the scientific and technical data necessary to the development and evolution of the industry. These manufacturers and their research laboratories have pledged their full co-operation.

From the collaboration thus secured will in due time emerge a laboratory whose mission will be to apply discoveries to actual production practice and to emit ideas of improvements in the technicalities of production, which ideas will be finally developed through the co-operation of all the research laboratories in existence in the country.

This program presents unlimited possibilities of advancement in our industry and the American Society of Cinematographers is looking forward to the creation of this laboratory and the establishing of these contacts with great faith in the greater future.

"Stills Move the Movies"

(*Continued from Page 23*)

the world for which the consumer is required to pay cash in advance before he is permitted to inspect the goods being purchased, therefore, the stills, which can be seen prior to purchase, are the foremost outlines and suggestions regarding the purchase and consequently should be the best obtainable. But they will never advance to their proper position in the industry until they find their proper place of operation—and that place is the publicity department.

"The Ace of Stunts"

(*Continued from Page 25*)

"On the whole, however, it was perhaps the most fascinating job I have yet tackled. I think it was the uncertainty, the constant doubt, the knowledge that we had to be always on the jump and trying, that made this the most unusual of all my camera assignments. It was difficult, but it was gripping, and I think we all enjoyed it to the utmost. Also the crew deserves the greatest commendation. They worked long and tirelessly and always without complaint. I think we have some unusual shots in this picture, made under the most trying circumstances, and I feel that all are deserving of a full share in the honors. I found Mr. Hawks ideal to work with, calm and far sighted, and always considerate of his crew and their co-workers."

Research in Industry

Speech of L. A. Hawkins, Executive Engineer, General Electric Company, at A. S. C. Dinner.

At the Spanish dinner tendered by the A. S. C. to the S. M. P. E. convention delegates on the evening of Monday, April 9, Mr. L. A. Hawkins, executive engineer of the General Electric Company, Schenectady, New York, delivered the address of the evening, choosing as his subject "The Value of Research in Industry."

Mr. Hawkins said in effect:

"Modern manufacturing is mostly engineering, and engineering is the application of the products of research. It has been the gradual realization of this truth that has made the research laboratory a nearly universal adjunct of the modern large manufacturing plant.

"This realization was brought home to American industries by the World War, when, as a result of the British blockade, the industries of all nations were brought to realize the amount of their dependence on the German industrial laboratories. The electrical industry was one of the few in this country which long before the war could see the potential value of the industrial research laboratory, and it has been no coincidence that in all lines of electrical development the United States has led the world. The research laboratories of the electrical industry have long been recognized as leaders in their field.

"The Eastman Kodak Company was also among the pioneers of industrial research in this country. The motion picture industry has been fortunate that it has been so largely served by manufacturing companies which have maintained extensive research activities.

"Both in organization and in nature of work, research laboratories of different industries vary widely. Differences in these laboratories are largely due to differences in the nature and variety of the products of the manufacturing companies that operate them. Any research laboratory, however, may perform any, or all of the three following functions:

"First: The industrial research laboratory is primarily a service department, with the primary duty of assisting other departments of the company in every way to improve the quality and reduce the cost of the product. In our own laboratory a large part of our efforts is engaged in this kind of work, and there are few products of the Company which have not benefited from it.

"Second: A laboratory may help to increase the business of the company that supports it through the development of new devices. About one-third of the total products of the General Electric Company consist of devices originating in the research laboratory.

"Third: Part of the work of an industrial research laboratory may consist of investigations in the field of pure science. It is such investigations that yield the new knowledge on which the development of new devices may be based.

"The relative importance of these three kinds of activities will vary with the nature and variety of the product. For instance, in the General Electric Company the great variety of our product justifies our going further afield in pure science than would probably be permissible in a company with a much more limited range of interest.

"What is the significance of the recent great extension of industrial research to the motion picture industry? Of course it means that the industry may confidently expect from the manufacturers that supply its needs, not only further improvements and refinements in the

AN OPEN FORUM

THE AMERICAN CINEMATOGRAPHER is the voice of the cameramen of the motion picture industry, but the cameramen are not inclined to be at all selfish about it.

It is the technical magazine of the industry and it is heartily friendly to every other department of the industry, for its ideal is that what is good for one is good for all.

THE AMERICAN CINEMATOGRAPHER therefore, here and now, formally and cordially invites producers, distributors, writers, directors, assistant directors, technicians, actors, title writers, laboratory operatives, still photographers, property men, publicity directors, art directors, executives, electricians, projectionists, and everybody else connected with motion picture production, distribution and exhibition and also the allied arts of the cinema to regard

THE AMERICAN CINEMATOGRAPHER

as the OPEN FORUM of the INDUSTRY and it places no restrictions upon communications submitted for publication, except that they be truthful, constructive, sincere and in good humor.

Now, come on with your letters. Get "it" "off your chest" and let's make of the motion picture industry the biggest get together organization on earth.

THE EDITOR.

apparatus it buys, but also new developments applicable to its art, like the talking machine picture and television. But how about research in the motion picture industry itself?

"This aspect of the subject I approach with diffidence, for you know far better than I the needs and problems of the industry. I can do no more than to offer a few suggestions and leave it to you to say whether they are apposite.

"I cannot imagine research in the motion picture industry profitably paralleling the physical and chemical researches of manufacturers, like the Eastman Kodak or General Electric Co. Such investigations require close contact with production in order to achieve maximum success and the motion picture studio is a user, not a producer, of apparatus. It is from the viewpoint of the user, then, that it would seem research should start. Research from that viewpoint is needed if your apparatus is to be best fitted to your special requirements. Without it you can only take what the manufacturer, lacking your special knowledge, has developed and use it as best you can. But with research on the use of apparatus you can tell the manufacturer what you need. And with the advent of new developments, such co-operation between maker and user is imperative for rapid and efficient progress. Take, for example, the talking motion picture. Now I know there are those who can see no future for it. They may be right, but it would be most dangerous for the American industry to agree with them until it has explored every possibility of the new development, for if the possibilities are there they will surely be developed to the full abroad, especially in Germany. And I believe that those who dismiss as negligible the talking motion picture after having seen and heard the first demonstrations have made the same mistake as those who belittled the motion picture itself when it first appeared. Those early pictures were merely crude reproductions on the screen of the more obvious forms of the so-called legitimate drama. No one then could foresee the great new art that was to spring from those humble beginnings. The screen is no longer an imitator of the stage. It has found itself, developed its own canons of art and its own technique, and produces its own marvelous effects of a kind which no other art can approach.

"These effects have been produced through the use of a single agent—light. Now sound is available as well, and the same type of genius that developed cinematography into a new art distinct from that of the spoken drama now has the means of creating still another new art form. The talking motion picture of the future will not be merely the picture of the present, with talk added. It will mean not merely that we may have on the screen Gilbert and Sullivan operas, or actionless plays like Bernard Shaw's, or classic drama like Shakespeare. It will mean not merely that with the news reels we shall hear the crash of the waves in a storm scene or the roar of the motors in an automobile race. Those are the obvious possibilities. What we cannot foresee are those possibilities that only artistic genius can evolve, such genius as that which, working with light alone, has made cinematography the wonderful art it is today, and which in the future, working with light and sound conjoined, will surely produce new art forms as marvelous as they are now unpredictable.

"But to hasten that day, to perfect the new tools with which artistic genius must work, a vast amount of preliminary research work must be done, which can best

INVESTIGATE INKIES

be done in a laboratory studio. In making the sound record the acoustics of the set and the best positions of the microphone will involve the development of technique as exacting as are the lighting of the set and the positioning of the camera today. In the theater many acoustic problems are involved in the reproduction. Not only the quality but the volume of the sound must be in keeping with the picture. A big voice coming from a small face is absurd, and yet the voice must be distinctly heard all through the theater. Nor can loud speakers be distributed around the auditorium. The sound must come from the screen, or illusion is destroyed. These are only a few of the more obvious problems.

"And soon we shall probably have television, not the television of today which can transmit only small objects such as can be screened by a high intensity beam, but television which can transmit a prize fight or eventually a foot-ball game by radio. The apparatus for such a feat will undoubtedly be too expensive at least initially for home use, so that it should first find practical use in the motion picture theater as an adjunct to, or as a partial substitute for the news reel, enabling the motion picture audiences to see and hear the most interesting events while they are actually taking place.

"Here again research will be needed, not only in the development of the apparatus but in its use; research such as the motion picture industry itself can best supply. And if research by a manufacturer is imperative today, if he is to keep pace with the extraordinary developments in physical science, and, by embodying the new knowledge in new devices, to keep pace with his competitors at home and abroad, so also the user of the new devices must, it would seem, conduct researches in their use or risk the danger of being outstript in technical equipment by foreign competition. The sole purpose of that technical equipment is to serve the artistic genius which is, and will ever remain, the dominant factor in the development of the motion picture. Genius cannot be created by research, but research can help enormously to improve the tools with which genius must work. And if any genius is deserving of the best tools that science and engineering can produce, it is the genius which has created that great new art, to which the American public turns in every increasing numbers for its entertainment, its instruction, and its cultural betterment, the marvelous art of modern cinematography."

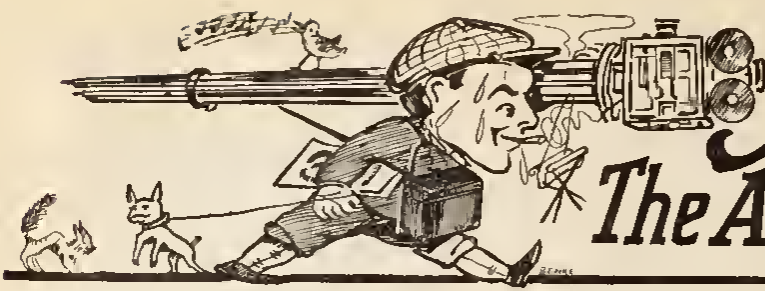
The Aims and Purposes of the Academy of Motion Picture Arts and Sciences

By Frank Woods, *Secretary of the Academy*

[ABSTRACT]

The Academy of Motion Picture Arts and Sciences composed of nearly all important personages of the five creative branches of motion picture production, is a unique experiment in organization engineering, being an attempt to unite the memberships of five creative branches of motion picture production for the common good. It is not a "company union," its main purpose being the advancement of the motion picture as an institution and in all its arts and sciences. It has been obliged, however, to become temporarily interested in employment problems, such as uniform contracts, for the purpose of promoting harmonious relations within the industry, but only as a necessary preliminary step toward unified effort. At the time the Academy was organized it found each studio with its own rules, methods and forms of contracts. Employment relations were without recognized standards. Various abuses existed that demanded correction. In the interest of the industry as a whole the Academy has been able to act promptly in these matters by the friendly cooperation of its branches. There are five of these, actors, directors, producers, technicians and writers, each being equally represented on the Board of Directors. Douglas Fairbanks is the president.

Frank Woods



Jimmy The Assistant

[EDITOR'S NOTE.—*Jimmy the Assistant is absent for a few weeks and his article for May was evidently delayed in transit. But in order that Jimmy's audience be not disappointed, the editor has gone back into the files of years ago and dug up two of Jimmy's letters which are just as live today as the day they were written.*]

Here is a little story I have written for moving picture use when censorship laws become universal. It is titled "The Rollo Family's Outing, or Virtue Triumphant in the Absence of Evil."

Mr. and Mrs. Rollo have been married just a year and are celebrating their anniversary. Mr. Rollo is standing on the lawn with a box of matches in his hand. These he lights one after the other, at the same time softly shouting "Whee!" He was much pleased for it was his idea of having fireworks to celebrate the day. Mrs. Rollo is standing just as close to him as would be proper, that is, about six feet away. Even so, her mother, who is chaperoning them, frowns slightly at this liberty.

Mrs. Rollo is very happy. Her John is so bold and daring. How fearlessly he strikes the matches!

Suddenly old man Rollo, Mr. Rollo's father, staggers from the house. Terror is written upon his face. "Look at this!" he gasps. Thrusting forth a calendar he points to a date. Horrors! It is Sunday, and John has not only smiled but actually shouted. Mrs. Rollo faints. Her mother goes into hysterics. Father dies, but in such a way as not to offend the censors. Rollo, aware of the gravity of this crime, bears up bravely. He takes the calendar, damning evidence of his guilt, and gazes upon it. Suddenly his face lights up. The date of the calendar is 1983. This is year 1984. Father was mistaken. Today was Monday, after all. He hastily revives his wife and mother-in-law with a draught from a pocket flask containing wh-whey and they join hands in thanksgiving. Father comes back to life in the form of a spirit, and as they are discussing their good fortune, a nurse comes out of the house. "It's a boy," she says. Mr. and Mrs. Rollo look at each other in surprise. Suddenly the truth dawns upon them. While all this excitement was going on a son had been born to them in the house. They both rush into the house to see the new arrival. Fade out.

Fade in. Entire cast in a line with joined hands. They recite in unison:

Censored we are,
Senseless we be,
So all that we can do or say is
tweedly, tweedle dee.

Fade out.

Wages and Salaries

There's an awful lot of difference in them two terms. Look at me, f'rinstance. Here I am, an assistant; I lug the camera junk around and hold a slate and do all the hard work there is around a camera. It's a hard graft and I get wages.

The cameraman I work for drifts into the studio two minutes before the hour on the call, gives orders all day, takes orders from nobody, does pretty much as he pleases, and he gets a salary. I do about 10 times as much labor as he does and he gets about 15 times as much dough as I do.

Now, let's figure it out. I do the most work, but he's worth a lot more than fifty times as much as me to the company. Fifty of me couldn't get the results that one of him gets. He gets a big salary but he earns many times that in not having retakes, doing good work under hum conditions, and in time saved by fast, efficient work.

He gets a salary; I get a wage. The difference between grey matter and a strong back runs into big dough. Brains earns the salary and brawn grabs the honest wage, no matter how low the salary or how high the wage. That sounds kinda funny, but here's the point. When this wage reduction thing really hits the studios, the wage earners will get it in the neck, while the salary earners won't know there was a cyclone.

Just f'rinstance, lets take a big dough wage getter, say a director. An egg who stands in with the Big Boss because he is liked personally, or has a good sellar, or sumthing else. He's making pictures and kinda half getting away with it. A good writer and a good assistant is responsible. The alleged director ain't using his brain none, so he's a wage getter. When profits get skinny the Big Boss is going to look over the sheeps and goats, sharpen up the axe and when we fade in again we see a painful absence of the wage-getting director. He had to be let go to make room for a director who could earn income for the company and a salary for himself. By all this I don't mean that a wage earner lives on graft or pull. Far be it from such. That's only an example of how big dough can be wages, not salary. Any ordinary hird can earn wages by honest work or by graft, but it takes a speshulist to get a salary and hang onto it by force of superior knowledge.

My boss who I spoke of is an example of a man who earns a salary. I know two other birds who get about the same dough as he does, only they gets wages, liable to damage, just like me. One of them is an old-timer. He started in the game way back in 1905. He's not old, but to hear his line of chatter you'd think he was personally acquainted with Noah. He likes to bawl out his director and he wears out about four assistants a year. He knows so much he don't have to think no more. He learned all there was years ago. He smiles at these young fellows with their funny ideas about new lightings, soft focus and special lenses.

The office knows he's a has-waa and they keep him on—well, because he used to be a wiz and they hate to adjust the can to him But when it comes to a show down, they're likely to replace him with some comer that did such a good work in such-and-such a picture.

The other one is the guy that photographs Marvel Pulchritude. He's got the poor wren kidded into thinking that he's the only one in the world who can make her beautiful. He thinks so himself. So he slips her the soft focus and lets the rest of the picture go to pot. She's got her own company, so he's pretty safe. But when the public gets sick of her he's going to have to learn a lot about motion picture photography before he gets another job.

A good, efficient cameraman with the rudiments of business knowledge, can knock enough off the cost of a perduction to pay himself a darn good year's salary. The office knows this and when they get hold of such a man they hang onto him. They are not going to cut his salary; they might lose him.

A mediocre, low priced man who flivs a scene occasionally is a dangerous economy. If he pulls a boner on a big day he loses more money for the company than the saving on his salary would amount to in years and years.

The office is hep to this, too, and they are mighty careful what kind of perductions they put him on. They may cut his wages; if he quits they know they can get plenty more as good as he.

Whether a fellow gets docked or not depends upon his class. If he earns a salary he is safe, but if he gets a wage, he's in for it.

Annual Meeting A. S. C.

At the annual meeting of the American Society of Cinematographers Monday night, the newly elected Board of Governors organized by electing the following officers for the ensuing year:

John W. Boyle, president; Charles Rosher, first vice-president; E. Burton Steene, second vice-president; Ira Morgan, third vice-president; George Schneiderman, treasurer; Joseph A. Dubray, secretary; Frank B. Good, sergeant at arms.

John W. Boyle

The retiring president, Daniel B. Clark, was elected to to the Board of Governors. The other members for the ensuing year are John W. Boyle, Joseph A. Duhray, Victor Milner, Al Gilks, George Schneiderman, Burton Steene, Frank Good, John Seitz, Alvin Wyckoff, Guy Wilky, Ira Morgan, Charles Boyle, Fred Jackman, Charles Rosher.

John W. Boyle, the new president, is a resident of Hollywood and has a long and honorable record as a cinematographer with many notable pictures to his credit. With his wife and two boys he lives at 1207 N. Mansfield Avenue and is prominent in the affairs of his community.

It was Mr. Boyle who made Theda Bara famous cinematographically when she was the headliner of the motion picture world as the star of William Fox. He photographed the amazing Bara in all her great pictures and won his spurs forever as an artist of the motion picture camera.

The new president of the A. S. C. takes his place with the highest individual vote ever accorded an aspirant to that office. He is personally popular among the rank and file of the A. S. C. and his administration will have the solid support of the membership.

The new faces on the Board of Governors are Joseph Dubray, Alvin Wyckoff, Charles Boyle and Charles Rosher, all veterans of the Society.

It is interesting to note that all officers were elected by unanimous choice of the voters, which forecasts a smoothly running machine for the ensuing year.

The formal installation of the new Officers and Board of Governors will take place at the Hollywood-Franklin Hotel, 6141 Franklin Ave., corner Vista Del Mar Ave., at 8 o'clock Monday night, April 30th, the retiring president, Mr. Daniel B. Clark, presiding.

To this ceremony all members of the A. S. C. in good standing are invited. A buffet luncheon will he served.

PHOTOGRAPHIC EQUIPMENT CLEARING HOUSE

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RATES: *Four cents a word. Minimum charge one dollar per insertion. All copy must be prepaid and must reach us before the fifteenth of the month preceeding publication.*

WANTED—MOTION PICTURE CAMERAS

WANTED—DeVry Standard Automatic Camera. Must be in perfect operating condition. Give description and price wanted. Leslie Young, 220 Connecticuit Avenue, New London, Connecticut

WANTED, CAMERA—Will buy Bell & Howell camera. State price and equipment. John P. Whalen, Gl. 1101 or A. S. C. GR. 4274.

WANTED—For cash, DeBrie, Pathe, Bell & Howell Standard camera. Send full description. Bass Camera Company, 178 West Madison Street, Chicago

FOR SALE—CAMERAS

FOR SALE—One complete 8x10 outfit, $150.00; one 8x10 Eastman View No. 2 Camera; one 8x10 Goerz Dagor, 12-inch focus lens, Flex Shutter; one Tripod pan and tilt head. All in excellent condition. Shirley Vance Martin, 4768 Elmwood Ave. Holly 1264

FOR SALE—1 Graff Variable Focus Lens, Mitchell Mount, 40-50-75 m m Finder and photographing lenses. 18 x 10 Ansco printer. J. R. Lockwood, 861 Seward St. GLadstone 8115

FOR SALE—Two Bell & Howell Cameras, 1 8-2 3-2.7 Lenses, large Mitchell finders, Mitchell tripods. Complete outfits. J. R. Lockwood, 851 Seward Street. CLadstone 6115.

FOR SALE—New Eyemo camera, carrying case, extra magazine. Price $225. Call Ben White, OX 7335.

One 12x20-inch Eastman Banquet Camera with case, two cut film holders, 12-foot tripod fitted with 15¾-inch Ziess Protar lens in volute shutter (New condition)
One press Graflex with 8½-in. B. & L. lens F4.5 film pack adopter roll holder, cut film magazine, and carrying case outfit in new condition.
One Eastman 8x10 View camera, "2-case, six cut holders.
One 4x5 Graflex and case (no lens or holders).
One 5x7 Ingento Enlarger with arc and condensing lenses.
One 4x5 kodak auto enlarger.
One 10-inch by 8-foot circuit printing frame with glass.
One 200-foot Ernemann M. P., camera case, 3 magazines; good condition.
One Ernemann M. P. step printer motor drive rheostadt light change.
Four 30-gallon developing tanks, capacity 3,125 feet (new).
FRED A. PARRISH, A. S. C.,
2526 W. Colorado Ave.,
Colorado Springs, Colorado.

FOR SALE—Graflex 4x5. Rev. Back-F 4.5. Lens. 2 Cut Film Magazines. Carrying Case Film Pack adapter. Good condition. Charlie Boyle Care A. S. C. or GR-1004

FOR RENT—CAMERAS

FOR RENT—Mitchell Camera No. 87 with latest high speed movement, high speed gear box and cable, complete, for high speed work, with or without operator. Equipped with Astro 40 m m F.1.8 Astro 50 m m. F 2.3 Astro 75 m m F.1.8. Eight magazines and Stumar matte box with filter holders and sun shade. Mitchell Camera No. 85 with regular movement. Astro 40 m.m. F 2.3 Astro 75 m.m. F 2.3 Duo 50 m m. F 1.25. Eight magazines and Stumar matte box with filter holders and sun shade. Eyemo Camera with Hoefner trit and pan. Pliny W. Horne, 1318 N. Stanley Ave., Holly 7682 or Mitchell Camera Co., Holly 8246.

FOR RENT—Bell & Howell, complete. Fast lenses, magnified finder, Mitchell tripod and Tilthead prism or Goerz upright eyepiece, R. DeGrasse, 525-533 4312 Ambrose Ave., Hollywood.

FOR RENT—Mitchell Friction Tilthead, Mitchell motor, 3 Mitchell and 2 Bell & Howell Cameras with large finders. Astro lenses. Extra magazines and equipment. J. R. Lockwood, 861 Seward St., Hollywood. GLadstone 6115. Res. 523 N. Orange St., Glendale. Glend. 3361-W.

FOR RENT—Three Bell & Howell 170 Degree Cameras, F. 2.3 and F. 2.5 lenses, Mitchell Tripod legs. Complete equipment. Eddie Linden, 5017 Elinor Ave., Hollywood, HEmpstead 8333 or A. S. C. office, CR 4274, GR 4704

FOR RENT—170 Bell & Howell 2.3 Astro 2″. Carl Zeiss 35 MM 2″ and 3″ Mitchell Finder, Mitchell Tripod and tripod head. Irs B. Hoke, 1312 N. Detroit St., GR 5033.

FOR RENT—Camera equipment: 1 Mitchell Camera, 1 Mitchell Speed Camera with attachment, new. 1 Bell & Howell, 1 Akeley (Full Equipment). Ted Tetzlaff, Phone GR 8255. 1724 N. Western Ave., Hollywood.

FOR RENT—3 B. & H. Cameras and Cinemotor, 2.3 Astro lenses, large Prismatic Mitchell finders and Mitchell legs. Special built-in side Prisms, Baby Tripod and extra Tripod and head; 8-in. lense in Mount. B. B. Ray, A. S. C. GR. 4274. 1118 N. Edgemont. Residence 531-381.

FOR RENT—B. & H. Camera, 170 degree shutter, six magazines, Mitchell tripod, Baby tripod, four lenses 50 m.m., F. 2.5, 40 m m F. 2.5, 75 m.m. F. 1.3 and 75 m.m. F. 2.5. Call Wm. Engleton, F B O Studio, Holly. 7780.

FOR RENT—Complete Mitchell outfit with astro lenses, six magazines, by Al Gilks, HE 1480.

FOR RENT—To reliable party, one Bell & Howell camera with Mitchell legs; Astro Lens F. 2.3, F1 8. 3 magazines. Fred Hoefner mat box. In perfect shape and fully equipped. Joe LaShelle. ORegon 8730.

FOR RENT—Two Bell & Howell cameras, large finders, astro lenses, F. 2.3, B & L 2.7. Frank Cotner, HO 5046.

FOR RENT—CAMERAS, ALL KINDS. Akeley, Bell & Howell 170°, also Speed DeVry Graflex, Still (late model Anscos). For rent by day or week to responsible parties. Ries Bros., Ries Bldg., 1152 No. Western Ave. Phone GRanite 1185; Residence, HO-1055.

MITCHELL and Bell & Howell cameras. F.1.8 and F.2.3 lens equipment. All kinds of lenses and equipment for rent. John S. Stumar, 3602 Cardiff Ave., Palms, Los Angeles. Phone: Culver City 3552 or call O. Clouner, Camera Dept., Universal City, HEmpstead 3181.

ONE DE VRY Motion Picture Camera. Complete outfit. Alvin Wyckoff. Phone Care A. S. C., GRanite 4274.

BELL & HOWELL. Victor Milner, 2221 Observatory Ave., Los Angeles, California. 596-844.

BELL & HOWELL—Phone Perry Evans, OL 8787 or Hollywood A. S. C.

BELL & HOWELL, 170, with 30, 40, 53 and 75 lens equipment. Baby tripod. Also B. & H. Cine motor. Charles Stumar. GRanite 3845. 7501 Lexington Ave., Hollywood.

FOR RENT—STILL CAMERAS

FOR RENT 1 8x10 Still Camera, focal plane shutter, complete, 1 Mitchell Friction Tripod, new, for B. & H. 1 Eyemo Camera with special lock. 1 4x5 Graflex B & L, lens. 1 B-H Low Boy to fit new style B-H Tripod head. Joe LaShelle, 838 N. Sierra Bonita, ORegon 8730.

ONE 8x10 still camera—complete. Care A. S. C., GRanita 4274.

FOR RENT—MISCELLANEOUS

FOR RENT—One Cinemotor with Veeder Counter in first-class shape. Call B. B. Ray, OL-2727, 1118 N. Edgemont Street.

FOR SALE—LENSES

FOR SALE LENSES—Carl Zeiss, F. 3.5, 50 mm. mounted in latest B. & H. mount. Looks like new. Perry Evans, 413 No. Maripose Ave., Hollywood, California.

FOR SALE—50 m m. Goerz Hyper lens F. 3.5 in B. & H. mount, $25. 50 m m. B & L. lens F. 2.7 in B. & H. mount, $45. J. N. Giridlan. Phone TErrace 8152.

ONE two-inch Bausch & Lomb F:2:7; one Dahlmeyer Pentac 37 mm. F 2.3. Georges Benoit, care of American Society of Cinematographers, Hollywood, California

NEW 40 mm. Goerz Hypar f. 3. 5 lens in Bell & Powell mount; price, $50.00. Write Charles Clarke, 1222 Guaranty Building, Hollywood, California.

WANTED—MISCELLANEOUS

FOR RENT, LENSES—Trick lenses of all descriptions for rent by day or week. Call George Meehan, A. S. C. Phone GR 8855, 744 North Curson Ave., Hollywood California.

WANTED—Will buy Bell & Howell cinemotor and s 32 M. M. Lense. Call Herman Schopp, HOlly 4735 or care A. S. C. office, CR. 4274

FOR SALE—SPECIAL CAMERA EQUIPMENT

PATHE panorama head for professional camera, with detachable aluminum tilting head, easily adapted to any standard tripod. A first-class unit for some one, who is experimenting or engaged in research work, to add to their equipment. Stephen S. Norton, care A. S. C., Guaranty Bldg., Hollywood.

FOR EXCHANGE—Want Typewriter. Prefer Royal. Will exchange 8x10 Ansco printer or lenses. J. R. Lockwood, 851 Seward St. GLadstone 5115.

Baby Tripod

This tripod is made similar to our standard tripod, except that it has a simple clamp, with a thumb screw. The top casting is machined exactly like the top casting of the standard tripod, so that it will fit the quick release unit, and making it adaptable for either our regular tilthead, or the Friction Tilthead.

Mitchell Camera Corporation

6011-6025 Santa Monica Blvd. **Hollywood, California**